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VOL. 17

TRANSCRIPT OF PROCEEDINGS

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1 FRIDAY, JANUARY 23, 1976

2
3 The hearing reconvened at 8:40 A.M. on Friday, January 23,
4 1976, in the Chambers of the Montana House of Representatives,
5 State Capitol, Helena, Montana.

6 The Honorable Carl M. Davis, Hearings Examiner, presided over
7 the proceedings.

8
9 APPEARANCES:

10 Applicants:

11 William M. Bellingham, Esq.
12 John L. Peterson, Esq.
13 John Ross, Esq.

14 Department of Natural Resources and Conservation:

15 Arden E. Shenker, Esq.
16 Donald MacIntyre, Esq.

17 Northern Cheyenne Tribe, Inc.

18 Peter Michael Meloy, Esq.

19 MR. BELLINGHAM: The written statement and testimony
20 or Bernard Goldhammer has been handed to the Court Re-
21 porter and Applicants now offer into evidence Applicants'
22 Exhibit No. 2-A.

23 BERNARD GOLDHAMMER, called as a witness by the Applicants, having
24 been first duly sworn upon his oath, both as to his written direct
25 testimony and as to the oral testimony to follow, was examined and
26 testified as follows:

27 (THE WRITTEN DIRECT TESTIMONY OF MR. BERNARD GOLDHAMMER WAS
28 DIRECTED TO BE INSERTED AT THIS POINT.)

STATEMENT OF TESTIMONY OF BERNARD GOLDHAMMER

My name is Bernard Goldhammer and I live in Portland, Oregon. I am 60 years of age and retired as power manager of Bonneville Power Administration as of December 31, 1974. I am testifying as a consultant in this hearing on behalf of a number of Bonneville customers who hire my services principally to work on long-range power planning.

I was born in Portland, Oregon, and graduated from Reed College with a Bachelor of Arts degree in economics in 1937. In 1938 I received a Master of Arts degree in economics from Colorado College and thereafter became a research assistant and teaching assistant. In 1942 I entered into governmental work with the transportation board and in 1943 transferred to the office of price administration. I joined the Bonneville Power Administration in 1943 and served with Bonneville until December 31, 1974. During the time I served at Bonneville I performed a variety of duties including preparation of economic reports, directing the forecasting group involved with loads and analysis of resources and other functions. For the past 14 years before my retirement, I was power manager. My duties as power manager entailed load and resource analysis, rates, power sales and exchange contracts, power supply and power scheduling. I worked on the Pacific Northwest-Pacific Southwest Intertie arrangements and the Canadian Treaty. I served as United States coordinator for power under the Treaty.

Bonneville Power Administration (BPA) was formed in 1937 under an act of Congress. It is a bureau in the U. S. Department

1 of Interior. Its basic duties are the construction of transmission
2 lines and the marketing of power from federal projects. In addi-
3 tion it is involved in the transmission of non-federal power for
4 other utilities in the Pacific Northwest area. Bonneville conducts
5 its activities in parts of Oregon, Washington, Idaho, western
6 Montana, western Wyoming and Nevada. Bonneville supplies approxi-
7 mately one-half of the total power requirements of Montana.
8 Anaconda Aluminum Company and Stauffer Chemical Company, two of
9 the largest firms in the state of Montana, receive power from BPA.
10 Bonneville markets the power generated at 29 dams located in the
11 Pacific Northwest and will market power from two dams under con-
12 struction. These dams, built by the Corps of Engineers and Bureau
13 of Reclamation, are located in Idaho, Montana, Oregon and Washington.
14 In Montana the dams are located at Hungry Horse and Libby. The
15 total capacity of the U. S. Columbia River System is 12,000 mega-
16 watts completed and 7,000 megawatts under construction. The U. S.
17 Columbia River Power System, which includes the federal dams and
18 transmission, does not own or operate any thermal generation.

19 When I refer generally to the Pacific Northwest herein I am
20 including the states of Washington, Oregon, Idaho, that part of
21 western Montana served by Montana Power, and that part of western
22 Wyoming and northern Nevada located within the Columbia River Basin.

23 The Pacific Northwest is a unique area in power planning and
24 operation. The region works very closely together in spite of its
25 pluralistic power ownerships by consumer-owned and investor-owned
26 utilities and the federal government which has a substantial part
27 of the regional generating capability and its high voltage trans-
28 mission. Most resources have been planned together, the trans-
mission system has been jointly planned and operations are carried

1 out jointly. Operations are conducted so as to carry the maximum
2 load at the lowest possible cost. The area has had a long history
3 of such cooperation.

4 Turning next to the background and history of the cooperation
5 among the northwest companies, even before World War I there were
6 major interconnections and some pooling of reserves and power supply.
7 In 1915, for example, The Washington Water Power Company connected
8 with Pacific Power & Light Company. In 1923 The Washington Water
9 Power Company connected with the Montana Power Company and Seattle
10 did the same with Tacoma. The Washington Water Power Company inter-
11 connected with Puget Sound Power & Light Company in 1926. In 1928,
12 we saw two major interconnections, Seattle with Puget Sound Power
13 & Light Company and Utah Power & Light Company with Idaho Power
14 Company. These interconnections enabled the utilities to take
15 advantage of the diversities of the loads and stream flow and the
16 sharing of reserves under emergency conditions. The stream flows
17 are quite different in the coastal streams where the big runoff
18 comes from heavy winter rains as distinguished from the mainstem of
19 the Columbia River and its upper tributaries where the heavy runoff
20 comes from melting snow in the late spring and summer.

21 In 1941 a six-company pool was formed as a result of the con-
22 struction of a transmission line by Montana Power Company and Utah
23 Power Company. In 1938 the first power became available from Bonne-
24 ville and Bonneville started constructing a high-voltage transmission
25 grid with interconnections with the consumer and investor-owned
26 utilities.

27 The War Production Board issued an order in 1942 requiring
28 the major utilities in the country to operate as pools in order
to make better use of the power resources during the war and to

1 conserve fossil fuels. Benefits of pool operations were so great
2 in the Pacific Northwest during the war that after the war all
3 participants decided to continue the pool as the Northwest Power
4 Pool. The participants determined to continue because they were
5 desirous of taking advantage of the diversity in stream flows and
6 thereby greatly reduce the reserve requirements. It has been esti-
7 mated that the pool saves at least 1,000 megawatts in reserve capa-
8 city. This is one reason why statistics of the Federal Power Com-
9 mission and other sources reveal that the reserve capacity in the
10 Pacific Northwest is less than other parts of the country; undoubtedly
11 the extensive pooling arrangements have led to this saving.

12 The Northwest Power Pool today consists of eighteen agencies
13 located in the states of Montana, Idaho, Utah, Washington, Oregon,
14 northern California and British Columbia, Canada. Three have ser-
15 vice loads in Montana (Montana Power, Pacific Power and Bonneville)
16 and five have generation in Montana (federal at Hungry Horse and
17 Libby, Pacific Power at Big Fork, Washington Water Power at Noxon,
18 Puget Sound Power at Colstrip No. 1, and Montana Power). Of the
19 eighteen agencies, two are located in Canada, three are federal
20 agencies, three are municipal systems, three are public utility dis-
21 tricts and seven are investor-owned utilities. The peak load is
22 approximately 34,000 megawatts and of that peak, about 30% comes from
23 the federal Columbia River Power System. The pool operates on a
24 voluntary basis and the operating organization of the pool con-
25 sists of an operating committee and a coordinating group. The
26 operating committee consists of one member from each major utility
27 through whom all pool matters are handled and unanimously approves
28 all actions. In its more than thirty years of existence, no

1 formal vote has ever been required to reach an agreement by the
2 operating committee. The coordinating group has no authority but
3 acts merely in a consulting capacity to the operating committee.
4 The five applicant companies in this proceeding are all members of
5 the Northwest Power Pool. There is no question in my mind but
6 that the Northwest Power Pool has led to better service for the
7 customers of the participants at lower rates.

8 The Northwest Power Pool, of course, is one of the main
9 examples of the integration and cooperation of the northwest
10 utilities; however, there are many others. A second example is
11 the nuclear plant at Hanford. When the new production reactor
12 was being built in the 1950's, there was an investigation made of
13 using the waste heat from that reactor for power generation.
14 Finally in September of 1962 Congress approved the construction
15 by the Washington Public Power Supply System (a joint-operating
16 agency organized by public systems in the state of Washington)
17 and the company was authorized to construct an 800 megawatt
18 generating plant and to sell the output to some 76 participants
19 and exchange this output with Bonneville. Seven of the partici-
20 pants serve loads in the state of Montana and those seven acquired
21 20.679% of the Hanford power.

22 A third example of cooperation and integration in the area
23 is the 1961 treaty with Canada for the joint development of the
24 Columbia River. The treaty provided for the construction of three
25 large storage projects in Canada and a sharing of the increased
26 power resulting from the controlled stream flow. Canada, as it
27 turned out, because of another project was not able to use its
28 share of the power provided for under the treaty so, instead,

1 Canada sold its share to United States utilities in the area.
2 Of the 41 participants in the arrangement, six serve loads in
3 the state of Montana---the six acquired 10.5% of the treaty power.

4 Another example of cooperation is the Pacific Northwest
5 Coordination Agreement. As distinguished from the Northwest Power
6 Pool which is a voluntary organization, the Coordination Agreement
7 is contractually binding. It became necessary as a result of the
8 treaty with Canada because some of the non-federal downstream
9 beneficiaries were to return a part of their share of the power
10 to Canada and in order for them to do so, they had to be assured
11 of either obtaining the water when they could use it or obtain
12 an equivalent amount of power. The Coordination Agreement runs
13 for 39 years and became effective in 1964. The signers of the
14 Coordination Agreement include two federal agencies, three muni-
15 cipal systems, five public utility districts, five investor-
16 owned utilities and one industry. All participants in Colstrip 3
17 and 4 are participants in the Coordination Agreement.

18 Another example of cooperation is the Hydro-Thermal Power
19 Program. When it became evident in the Pacific Northwest that
20 the load growth of the various utilities could no longer be met
21 by building more dams or obtaining more power out of the rivers
22 with a result that thermal generation would be necessary for the
23 utilities in the area to meet their load growth, Bonneville called
24 together the utilities in the area and formed a group charged with
25 the task of chartering the best way to proceed with thermal
26 generation. It was recognized that for maximum efficiency large
27 plants would be necessary and they would have to be integrated
28 both with the existing hydro system and with the transmission

1 system as well. The plan, called the Hydro Thermal Power Program,
2 was approved by the national administration in 1969 and immediately
3 plans were developed for the building of a number of thermal-
4 fired generating units.

5 The program was divided into two main phases. Phase One of
6 the program was to develop resources to meet the load demands
7 through 1982. This phase originally included 12,000 megawatts of
8 thermal generation and 9,000 megawatts of hydro generation.
9 Colstrip Units 3 and 4 are included among the plans for the thermal
10 generation in Phase One of the program.

11 Phase Two of the Hydro Thermal Power Program covers the
12 period from 1983 through 1986 and it originally proposed 7,500
13 megawatts of thermal generation and 3,700 megawatts of hydro
14 generation.

15 Applicants' Exhibit No. 2A shows the Pacific Northwest
16 thermal plants presently planned which come under the Hydro Thermal
17 Power Program referred to above. The exhibit was prepared by
18 Montana Power Company personnel and I have examined it to determine
19 its truthfulness and accuracy. I believe it to be such. The
20 thermal plant schedules are shown at the right side of the exhibit
21 with names of the plants, their capability in megawatts and the
22 probable energy dates being listed. The map appearing on the
23 exhibit gives the location of the various plants along with the
24 identification as to whether or not each plant is a coal project
25 or a nuclear project. The transmission systems also appear upon
26 the exhibit.

27 One of the fundamentals of the Coordination Agreement is that
28 each utility must have sufficient resources to carry its own load

1 under adverse water conditions. If any one utility is short, the
2 whole area is short. A good illustration of this was in 1973
3 when we had a drought and stream flows on the Columbia River were
4 running below the lowest ever recorded. It became necessary to
5 share resources among various utilities in order to meet the load.
6 In effect, utilities that had surplus energy sent it to those with
7 deficiencies. What we have in the northwest area is a cohesive
8 group made up of the utilities who plan their resources and trans-
9 mission systems together, which in the final analysis aids the
10 individual utilities to have sufficient resources to meet their
11 loads. In the event of an emergency, a utility is in a position
12 to call upon other utilities to help it weather the emergency.
13 I should add also that there has been a very cooperative attitude
14 among the utilities in developing their resources and otherwise
15 working with each other to solve their mutual problems.

16 The reliability of load forecasts is always a subject of
17 interest. I actively participated on behalf of Bonneville in
18 analyzing the West Group forecasts prepared by the Pacific
19 Northwest Utilities Conference Committee (PNUCC) over a period of
20 years. As was pointed out in Roger Hofacker's testimony, the
21 four applicants excepting The Montana Power Company have been a
22 member of the PNUCC for many years. The Montana Power Company
23 has recently joined the group. In the past when the estimates
24 were compared with the loads that actually developed, the fore-
25 casts of the West Group have proved remarkably accurate. The
26 estimates, while very good, tended to be on the conservative or
27 low side. It is to the electric utilities' self-interest to
28 estimate future load as accurately as possible. If loads are

1 overestimated and generation is built to meet these loads, the
2 utility is faced with the high fixed costs of unused transmission,
3 generation, and distribution facilities. Overestimated load fore-
4 casts mean wasted investment, excess expense, and lower net returns,
5 and bring on unnecessarily higher power rates---to the great dis-
6 satisfaction of the consumers. On the other hand, the costs of
7 underestimating include the loss of taxes and payrolls; cause
8 limited economic development; and include the further risk of poor
9 service, brownouts, and blackouts---to the great dissatisfaction
10 of the consumers. It is my opinion that in the long run it is
11 better to overestimate the loads than to underestimate them.

12 It is my opinion that future forecasts of the West Group
13 are too low. One of the main reasons for this conclusion is the
14 fact that the prices of other fuel alternatives, oil and gas
15 particularly, have been increasing more rapidly than the rates
16 charged for electricity so that electricity today is being favored.
17 An example of this is that more and more homes are installing
18 electric heat instead of other heating alternatives. This not
19 only applies to new homes but old homes as well where residents
20 are converting from other fuels to electric heat. The same thing
21 is also true of industry where the high cost of oil and gas and
22 curtailments in some areas have led to conversion to electric
23 power. In addition, the institution of environmental standards
24 such as clean air and clean water requirements necessitates the
25 use in many cases of pollution control devices in order to meet
26 the standards; this has resulted in an increased demand for
27 electricity to run the control equipment. In this connection,
28 Stanford Research Institute in a report recently published estimated

1 that the pollution control requirements will increase from 2% of
2 the total energy used in North America in 1974 to 4% of the total
3 energy by 1980.

4 There are many other areas where we can expect future load
5 growth. Thus irrigation lands in the Pacific Northwest have
6 increased 27 times since 1950. The consumption of electricity
7 for irrigation is increasing rapidly. It has been estimated that
8 the power required for irrigation in 1990 will be three times as
9 much as today. Sewage and water treatment is also a growing
10 electrical load. Many communities in the northwest area are
11 without primary sewage treatment plants and many are without
12 secondary treatment facilities. Regulatory standards are growing
13 more stringent. Secondary and even tertiary systems are being
14 installed to upgrade pollution control and all of these require
15 many kilowatt hours. There are many other areas where there
16 undoubtedly will be an increased demand for electricity and these,
17 along with those mentioned above, leads me to the conclusion that
18 the utilities in our area are underestimating future growth in
19 their load forecasts.

20 Turning next to resources, I do not see any possibility of
21 developing adequate resources in a short order. Oil and gas
22 combustion turbines are probably the fastest alternative available
23 but these have many drawbacks. They are very expensive to operate
24 for one thing, and the availability of enough oil and gas to run
25 the turbines has become a serious matter. The four Senators from
26 Oregon and Washington have instructed Bonneville not to use any
27 generation requiring oil in their planning so that as a practical
28 matter, combustion turbines are not an alternative to Bonneville.

1 Furthermore, it is a part of the administration's energy policy
2 not to use oil and gas and this, of course, enters into any
3 decision as to what alternatives are available.

4 There is little question but that Bonneville will be short
5 of power resources in the late 1970's and early 1980's and as a
6 result, some time ago we investigated the possibility of securing
7 power for utilities interconnecting in the west and in Canada.
8 We were unable to secure such a supply. In order to avoid a
9 possible breach of contract, Bonneville has worked out an arrange-
10 ment with its major industrial customers so that they will take a
11 lower grade of power than they now receive; that is, a part of
12 the power which these customers will receive in the future from
13 Bonneville can be cut back at Bonneville's option when such a need
14 arises.

15 There can be little doubt but that any restriction upon
16 planned generating facilities will lead to adverse effects upon
17 the population of our area. Thus it has been estimated that we
18 will need to provide jobs for more than 800,000 young people in
19 the Oregon, Washington, Idaho and western Montana area by 1990.
20 The foregoing figure is based upon children who are already in
21 this area and excludes any new migration. In the Pacific North-
22 west approximately 50% of the electrical energy is used by
23 industry and if Colstrip 3 and 4 is not built, this will result
24 in a loss of nine billion kilowatt hours a year; of this, 4.5
25 billion will be lost to industry. This results in a loss of
26 energy needed to provide approximately 190,000 industrial jobs.

27 There has been a lot of talk about a decrease in demand for
28 electrical power and consequently the possibility of delaying

1 new generating facilities. The Federal Power Commission during
2 March of this year reported that some geographic regions exper-
3 ienced a definite reduction in electric energy use and demand in
4 1974 while others showed continued load growth. The entire United
5 States is divided by the Federal Power Commission in its tabula-
6 tion into eight different regions, and four of the eight regions
7 showed a gain in electric energy use and demand in 1974 as com-
8 pared with 1973 while four regions showed a decrease. The economic
9 recession is a significant and a primary factor in slowing the
10 growth of demand.

11 The northwest region as embraced in the Federal Power Com-
12 mission report comprises the states of Montana (with the exception
13 of the eastern part of the state), Idaho, Oregon, Utah, Washington,
14 northern California, northwest and southwest corners of Wyoming,
15 and the northeast corner of Nevada. This region showed an increase
16 in 1974 over 1973 of 6.8%.

17 An analysis of the need of additional energy is not complete
18 without exploring the possibility of conservation to reduce demand.
19 We have had some experience with conservation efforts in our region
20 and there has been experience elsewhere to give us some insight on
21 what savings we might be able to achieve through conservation. It
22 appears that the Pacific Northwest during the severe drought in
23 the year of 1973-74 saved around 5% of their total load as a result
24 of conservation efforts. A year later with ample water and an
25 adequate power supply, conservation declined to around 2% of normal
26 power requirements. The decrease in conservation was anticipated
27 since there was no great pressure placed upon the people at this
28 time. I have studied the results of conservation in Sweden and

1 there is no question but that it is almost impossible to maintain
2 a consistent program which will result in material decreases in
3 electric power demand over a period of time. The Project Indepen-
4 dence report, published in November of 1974 by the Federal Energy
5 Administration as a result of a program to evaluate national
6 energy resources and to formulate energy planning, for the future,
7 estimates that with a strong conservation program, electric energy
8 consumption 1980 may be reduced by 5% from its normal level.
9 Examining the various factors in conservation, it might be pos-
10 sible to save one year's load growth, which in effect would defer
11 projects one year. Colstrip 3 and 4 have already been delayed
12 two full years so if the power supply is to be adequate, conser-
13 vation is essential although it may not be adequate and some
14 restriction of electric power deliveries may be necessary in the
15 future.

16 Most of the hydroelectric potential energy in the Pacific
17 Northwest has been developed. Several of the remaining sites
18 are in areas proposed as for "wild rivers" and are not likely to
19 be developed. At most, hydroelectric potential sites might
20 yield two years of load growth. The time span for studies and
21 construction would be 10 to 15 years so that this hydroelectric
22 potential might be available in the 1985-1995 period. It could
23 not be developed soon enough to be a substitute for Colstrip 3
24 and 4.

25 With nearly all of the feasible hydroelectric energy
26 potential in the region already developed, there is bound to be
27 a transition to thermal forms of generation in the Pacific North-
28 west in the near future. In the next 20 years, Bonneville esti-

1 mates that firm energy resources will nearly triple from about
2 14 million to about 38 million average kilowatts. Because of the
3 limited availability of hydro, more than 90% of the added energy
4 must come from thermal generation. The thermal generation will
5 include both nuclear and coal-fired plants. Peak generating
6 capacity will also triple from about 25 to about 74 million kilo-
7 watts in the Pacific Northwest area. In contrast to the energy
8 situation, however, hydro will provide about 40% of the added
9 peaking because additional generating capacity can be installed
10 at existing dams. This additional generating capacity, however,
11 will provide virtually no more firm energy than that produced by
12 the existing installations, but the new units will contribute
13 significantly to help meet peak loads. While hydro provides a
14 major portion of the entire load today, it is contemplated that
15 the hydro resources will be used increasingly to serve the peak
16 demands and the thermal plants will operate principally as base-
17 load plants. This will permit the most economical operation
18 because thermal plants are most efficient when operating at a
19 high plant factor and hydro plants can more quickly respond to
20 swings in the load; that is, they can be turned on and off more
21 easily and more economically.

22 Currently in the Pacific Northwest, 84% of the electric
23 energy generation comes from hydro, 8% from coal, 6% from nuclear,
24 and 2% from oil. By 1984-85 Bonneville estimates that 52% of the
25 generation will be from hydro, 15% from coal, 31% from nuclear,
26 and 2% from oil.

27 In the United States as a whole, only 15% of the electric
28 energy generation is from hydro, 44% from coal, 37% from oil and

1 natural gas, and 4% from nuclear. The Project Independence report
2 forecast for 1985 states that with an effective conservation pro-
3 gram, 13% of the electric energy is expected to be from hydro,
4 38% from coal, 14% from oil and natural gas, and 35% from nuclear.
5 Dependence on coal is expected to reach 48% of the total in 1980,
6 but after 1980 nuclear generation is expected to expand rapidly.

7 Total per capita energy use in the Pacific Northwest is
8 about the same as the nation's. However, the pattern of use is
9 quite different. With its large hydroelectric installations,
10 the Pacific Northwest region in 1972 depended upon this resource
11 for 43% of its total energy supply while the nation secures only
12 4% of its total energy supply from hydro. On the other hand, the
13 United States as a whole secures 18% of its energy from coal while
14 in our region coal supplies only 3% of the region's energy needs.
15 In order to correct any possible misunderstanding I should add
16 that in this paragraph I am referring to total energy supply,
17 which includes not only electricity but also other energy resources
18 such as wood, coal, oil, gas, etc.; this is to be distinguished
19 from the figures appearing at page 14 and at the top of page 15
20 which refer to electric energy only. The sources of energy for
21 the United States and the Pacific Northwest in 1972 were as follows:

	<u>U. S.</u>	<u>Pacific Northwest</u>
Oil and natural gas liquids	46%	37%
Natural gas	30%	16%
Coal	18%	3%
Hydro	4%	43%
Nuclear	<u>2%</u>	<u>1%</u>
Total	100%	100%

1 Another potential that needs to be examined as a possible
2 resource is the Pacific Northwest-Pacific Southwest High Voltage
3 Interconnection. This intertie consists of two 500-KV alternating
4 current lines and one 800-KV direct current line. These lines
5 start from the Columbia River and end in southern California.
6 The lines are used for a number of purposes. One of the major
7 uses is the exchange of daytime or peak energy from the Pacific
8 Northwest for off-peak energy (nighttime and weekend) from
9 California. Since the peak energy is more valuable than off-peak
10 energy, California utilities must return more firm energy than
11 they receive. Another use is sale of surplus energy to California
12 when the Columbia River streamflow is high. The Central Valley
13 Project receives 427 MW of the Centralia power over these inter-
14 tie facilities. This purchase from 1972 through 1981 enabled the
15 utilities in the Pacific Northwest to build Centralia earlier
16 than was otherwise possible.

17 We have examined the possibility of securing power from
18 California, but find that utilities there are unsure of their
19 future power supply. Since the California utilities depend
20 heavily on oil, they are also unsure of their fuel supply.

21 In view of the fact that Montana Power had imported approxi-
22 mately 20% of its load for many years in order to serve the needs
23 of its customers, all of whom are located in Montana, I do not
24 believe that Montana as a state is shouldering an undue share of
25 responsibility in having Colstrip 3 and 4 built in Montana,
26 particularly in view of the fact that other companies in the
27 Pacific Northwest are also building plants as revealed in Appli-
28 cants' Exhibit No. 2A. As a matter of fact, Colstrip 1 through 4

1 will represent only about 5% of the area's power capacity when
2 the Phase 2 program is completed 10 years from now.

3 If Colstrip is delayed, the region will end up with a power
4 shortage rather than the development of an alternative power
5 resource. There is no viable alternative to Colstrip 3 and 4.
6 The lead time necessary to put plants on line rules out all other
7 forms of alternative generation with the exception of turbines
8 powered by oil or gas. As noted above, this is not a viable
9 alternative because of the scarcity of these fuels and the high
10 cost of operation.

11 I would like to comment on the relation of Colstrip to
12 national energy policy. Our dependence upon large imports of
13 oil must be controlled. In addition to conservation, smaller
14 and lighter automobiles, insulation and other energy-saving
15 means, another method of control would be to substitute electric
16 energy for some use of oil. For example, some railroads may
17 be electrified. Mass transit could substitute electric energy
18 for oil. More households could use electric heat. To substitute
19 electric energy for oil or potential oil use requires fossil fuels
20 or nuclear fuels to generate electricity over the next few years.
21 Project Independence looks to coal-fired generation of electric
22 energy to provide most of the needed expansion of electric energy
23 through 1980. During the 1980's most of the growth in electric
24 power resources is expected to be supplied by nuclear fuels. The
25 Project Independence report expects coal-fired electric generating
26 capacity to nearly double from 167,000 MW in 1973 to 327,000 MW
27 in 1985.

28 Construction of Colstrip 3 and 4 is consistent, is desirable,

1 and is necessary from a national energy standpoint to limit our
2 dependence on oil imports and secure our objective of energy
3 independence.
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1 EXAMINATION OF BERNARD GOLDHAMMER

2 Cross, by Department of Natural Resources and Conservation

3 By Mr. Shenker:

4 MR. BELLINGHAM: I should add, while we're waiting
5 here, there are two minor corrections to be made in his
6 testimony. At page 1, line 27, the year 1938 should
7 read 1937. At page 4, line 28, the word, sixteen,
8 should read thirty, and I will furnish to the Reporter
9 corrected pages, including those changes.

10 HEARING EXAMINER: Very well.

11 MR. SHENKER: It took me enough years as a lad
12 growing up to call those who were a little older than I
13 by their first name and now I'm going to find it very
14 difficult to call you by last name. Our relationship
15 goes back many years and our families have been friends
16 for many years, as well. You won't be offended if I re-
17 fer to you as Bernie rather than Mr. Goldhammer?

18 MR. GOLDHAMMER: Not at all

19 Q You note in your written statement, Bernie, that you're testi-
20 fying as a consultant on behalf of a number of Bonneville
21 customers who hire your services principally to work on long-
22 range power planning. You retired from Bonneville as the
23 power manager a little bit more than a year ago?

24 A Right.

25 Q And I take it that these customers, these clients, of your
26 consulting services, have been your principal consulting
27 activity over the last year?

28 A That's right.

1 Q Can you give us an idea of the number and the range and the
2 diversity of the people who are involved?

3 A Yes, it includes the five participants in the Colstrip hear-
4 ing, the five utilities. It includes all of Bonneville's
5 direct service industrial customers, which include the alumi-
6 num producers, the chemical producers. It includes, for ex-
7 ample, Crown Zellerback, for instance, which is a pulp and
8 paper plant. It includes one of the former Bonneville cus-
9 tomers who has a contract still for interruptable power, but
10 has retained my services, and that is Cominco, which had a
11 phosphate plant in Montana, which isn't operating at the pre-
12 sent time. It includes Dow Chemical, which anticipates putting
13 in a quarrying plant, but it will not be a direct Bonneville
14 service customer, and although in my contract, it does not
15 include the public systems, the contract provides for my con-
16 sultation with them, and I have been working very closely with
17 the publicly owned systems, and particularly, the co-ops.
18 I've helped the cooperatives, for example, organize Generat-
19 ing Energy, which was incorporated recently in the State of
20 Oregon.

21 Q For the more than 30 years that you worked for Bonneville, I
22 know that your general reputation there soon made you kind
23 of the walking encyclopedia of all information that had to be
24 known in Bonneville, and when your deposition was taken last
25 year, then it was only a few months since your retirement
26 from Bonneville and it was difficult for you to avoid saying
27 "we" for Bonneville. You still have, I assume, a very close
28 connection with what's going on at Bonneville and an

1 understanding of what they're doing?

2 A Yes, I keep very closely in touch with Bonneville, and of
3 course you're well aware the people in Bonneville whom I had
4 a long association with are close friends of mine. My office
5 is only a few blocks away and we get together frequently.

6 Q And today there is in the hearing room with you the local
7 representative of Bonneville, Ron Wilkerson, and the repre-
8 sentative of the regional solicitor's office for the Depart-
9 ment of the Interior assigned to Bonneville. They tell me
10 they're not here to protect you, they're just here because
11 they're interested. Now, the written statement that you have
12 offered in testimony describes some of the services which
13 Bonneville performs, noting, for example, that Bonneville
14 supplies approximately one-half of the total power require-
15 ments of Montana. That's as a result, of course, of the very
16 large industrial customers of Bonneville?

17 A Yes, it's as a result of the Anaconda Aluminum Plant and the
18 Stauffer Chemical Plant.

19 Q It is also true, is it not, if you look at the entire system
20 load of Bonneville, that one-third of all of the power de-
21 livered by Bonneville is delivered to not only industrial
22 customers, but specifically, to the aluminum companies of the
23 Pacific Northwest?

24 A It depends upon what year you're looking at, because they get
25 large amounts of secondary or interruptable power. If we
26 take the last couple of years, when water conditions were
27 very good, it would amount to about a third.

28 Q Your contract with the industrial customers such as the

1 aluminum companies, provides them with what you call in-
2 terruptable power and as a result of the fact that they do
3 not have exclusively firm power, they are paying a somewhat
4 lower rate?

5 A Yes, the rate is based on availability. If it's 100% avail-
6 ability, they pay exactly the same rate as any other customer,
7 and then there's a sliding scale, depending on availability.
8 If the availability is fairly high, they pay a rate close to
9 it, and as the availability gets smaller and smaller, the
10 rate goes down proportionately.

11 Q Can you tell us for the record, please, what does the Bonne-
12 ville charter provide as to the priorities for Bonneville's
13 rendering of power?

14 A The Bonneville Project Act provides that in contracting for
15 power a preference in priority should be given to public sys-
16 tems and cooperatives, so if there's a pending application,
17 for example, from one of the preference customers for power,
18 Bonneville would have to contract with them instead of with a
19 private company. I might say also, it further provides that
20 if a sale is made to a private company for resale -- in other
21 words, an industrial utility -- there has to be a provision
22 for withdrawal of the power on five years' notice if that
23 power is required by a preference customer. There is not this
24 provision with regard to industries. They can be firm 20-year
25 contracts.

26 Q And such contracts have been entered into by Bonneville?

27 A That's right.

28 Q If we go back some years ago, Bernie, to the late 1950's, in

1 that time frame, at that point Bonneville found itself in
2 the position where they either would have to expand the
3 customers who took the power, or they would seriously have to
4 consider some substantial rate increase, do you recall that?

5 A Yes. This was really not in the -- in the late 1950's, Bonne-
6 ville started running deficits, and one of the factors that
7 was very significant in the deficit is, there was a tremen-
8 dous amount of water that could have gone through generators
9 that was spilled, and so we had two alternatives facing us,
10 and I'm speaking now as of when I was at Bonneville, of rais-
11 ing rates or trying to find a market for a product that was
12 then wasted.

13 Q The alternative that you chose was to find the market, and
14 the market that you found was in large industrial users of
15 energy?

16 A Well, there were two markets that we found. Actually, the
17 market that we found for industry on large users was a market
18 that developed because of the Korean War. It was not because
19 Bonneville was still running surplus revenues, but in the
20 Korean War, a decision had to be made. Defense needs required
21 a substantial expansion of the aluminum industry and anywhere
22 that it expanded other than the Northwest, there would have
23 to be a construction of power plants, which would be steam-
24 generated power plants, in order to get the aluminum fast
25 enough needed for defense purposes, or you could take what
26 the defense authorities called a calculated risk, expand the
27 plants in the Northwest, based on interruptable power, and
28 the aluminum industry did expand in the Northwest during the

1 Korean War, based on interruptable power, power up to medium
2 water conditions instead of critical water conditions, with
3 taking the calculated risk that you might not get the alumi-
4 num you needed, and I might say that during the Korean War,
5 this was a good risk. Ten percent of all the aluminum pro-
6 duced in the United States during the Korean War was produced
7 by interruptable power in the Northwest.

8 Q A number of plants in the Pacific Northwest opened after the
9 Korean War, too, because as the power was generated by Bonne-
10 ville, it was available even after the conclusion of the
11 Korean War, isn't that true?

12 A Yes. Looking at the expansion of industry, there were four
13 factors that I should take into account. One was the very
14 large expansion that took place during World War II, when
15 Grand Coulee and Bonneville were getting into production, and
16 this area could provide a large base of firm power then.
17 Generators that were scheduled, for example, to be installed
18 at Shasta, were installed at Grand Coulee instead, because at
19 Shasta they were installed for peaking purposes, at Grand
20 Coulee, they could operate 100% of the time, so there was a
21 large expansion during the war. After the war -- a good part
22 of these plants were built by the government, the Defense
23 Plant Corporation -- after the war, the government wanted to
24 continue the operation of these plants --

25 Q This is World War II you're talking about?

26 A World War II -- and every one of the plants was continued in
27 operation and was sold so that it was operated by private
28 companies. The Korean War, we had a second wave of expansion.

1 About the same time as the Korean War, Hungry Horse Dam was
2 built, and there was a provision in the Hungry Horse project
3 that a certain amount of the power be reserved first for sale
4 in Montana. As a result of that provision, two contracts
5 were made, for the sale in Montana, where the power would
6 otherwise not have been available in other parts of the North-
7 west for these plants and that was the aluminum plant which
8 was first Harvey Machine Company and then Anaconda Aluminum
9 took it over, and a chemical plant which now Stauffer oper-
10 ates, using phosphates. All right, the third wave of expan-
11 sion came as a result of the negotiations on the treaty,
12 where we found that in order to make the treaty economical --
13 I should state here that the treaty was negotiated principally
14 for flood control, not for power purposes.

15 Q You're talking about Canadian-American?

16 A The Canadian-American treaty for the Columbia River. Efforts
17 were made after the disastrous flood on the Columbia in 1948
18 to construct storage projects and these projects went for
19 naught because there were objections to each one of the stor-
20 age projects proposed. For example, here in Montana, there
21 were proposals for, let's say, Glacier that would backwater
22 up into Glacier National Park, for Knowles, which would flood
23 out a big agriculture area, so the Corps of Engineers, which
24 had the responsibility for flood control, concluded that it
25 wasn't possible to get the necessary flood control in the
26 United States, so a treaty was negotiated with Canada, with
27 the primary purpose of flood control, but as in projects in
28 the United States, power was going to pay most of the costs,

1 and as a result of this treaty, the United States Government
2 paid Canada about \$69,000,000 and in addition, half of the
3 downstream benefits. Now, at the time of the negotiating of
4 the treaty, Canada was of the opinion that they would use
5 this power themselves. We offered in the negotiations -- and
6 I might say that I was one of the technical staff on the
7 negotiations -- that we would take the power and help pay for
8 the construction of the dams. Later, B. C. took over the
9 development of the Peace River and concluded they had to sell
10 this power in the United States. This gave us a big block
11 of power and the only way that we could find to make the
12 treaty feasible from our standpoint in the United States, for
13 power purposes, was to sell a large amount of this power to
14 industry, and we allocated a million kilowatts, a thousand
15 megawatts, of power to industry, most of which was taken by
16 the aluminum industry.

17 Q I think you have just documented my point about the encyclo-
18 pedic nature of your information. Now, as we look back in
19 this year 1976, to the events of the past 20 or 30 years and
20 the expansion periods that you have described, it's a fair
21 statement, isn't it, Bernie, that we are today, in effect,
22 paying the price for that kind of expansion that took place?

23 A No, I wouldn't say so. I would say, let's look at the expan-
24 sion. In World War II, we wouldn't have had the ships, we
25 wouldn't have had the planes, if we hadn't expanded the alum-
26 inum industry. The federal government anti-trust division
27 wanted to get competition in the aluminum industry, looking
28 at future problems that arise in defense, and the only way

1 they saw of getting it was to expand the industry in the
2 Northwest, which they did. Secondly, in the Korean War, we
3 would not have gotten the defense needs. You might argue,
4 well, maybe you didn't need them, because the war didn't last
5 that long, but at the time, you didn't know.

6 Q Let me interrupt you for just a second. I think you're going
7 to explain to me that there were very good reasons for taking
8 the actions that were taken at the times they were taken. I
9 don't mean to argue with that. I simply mean to observe that
10 as we look at 1976, today, with the historical perspective,
11 no matter how good the reasons may have been for the actions
12 that were taken in the past, we are today having to react to
13 the results of the actions taken in the past, isn't that true?

14 A That's true, but let me go ahead and answer that specifically
15 as to the current situation. The current situation is such
16 that -- let's look at the aluminum industry and the chemical
17 industry that take the large amount of power, because I
18 gather that's what your reference is to. In the first place --

19 Q Well, it's that and the Bonneville expansion that is related
20 to the power use.

21 A Right. Number 1, without the prospect that we could sell the
22 thousand megawatts to industry, I think there would have been
23 considerable objection to going ahead with the treaty because
24 of the effect on Bonneville rates. It would have made a sub-
25 stantial increase in rates if we weren't able to dispose of
26 that power very quickly, because we still had to pay the costs
27 relating to the treaty. Secondly, without the large sale to
28 industry, you would not have had the high voltage grid that

1 was developed in the Northwest. There were studies made by
2 the Federal Power Commission at the time -- just prior to the
3 time that Bonneville was getting into operation. The conclu-
4 sion of the Federal Power Commission was that you had to have
5 large loads, some high-use loads, in order to justify, for
6 example, the 230-kv grid that was built at that time; other-
7 wise you would have had a number of smaller lines using much
8 greater right-of-way without the industrial use. The third
9 factor, which is also significant, is the rates, as pointed
10 out in this Federal Power Commission report I'm referring to,
11 would have been very substantially higher, because this way,
12 in the -- during the period of World War II, all the power was
13 being sold and Bonneville at that time had substantial sur-
14 pluses, because in setting the rates, it wasn't anticipated
15 there would be sales to such a large extent. Secondly, dur-
16 ing the Korean War, we found markets for the secondary energy
17 and there was a report by Bonneville that in 1954, a 20% rate
18 increase was anticipated. This was a report prepared at the
19 end of 1949, I believe it was, or 1950. That rate increase
20 was avoided because of the sale of surplus energy, so that
21 consumers had a much lower rate. Likewise, potential rate
22 increases that would have arisen if the treaty had gone ahead --
23 and I think I mentioned that there wasn't any question but
24 what it would have -- if the power wasn't sold to industry,
25 so looking at the situation, we find this, as far as the
26 Northwest is concerned. You have a high voltage grid system,
27 which probably otherwise would not exist. You have a multi-
28 plicity of lower voltage lines built as the market developed.

1 Secondly, you have lower rates. Third, you would have had to
2 develop much of the hydro, anyway, for reserve purposes, be-
3 cause we have, in contrast to the rest of the country, we've
4 used and sold our reserves. We sold them to industry, and we
5 cut industry off when these reserves require -- I should say,
6 part of industry, because you can't cut it 100% off. Lastly,
7 we have, nationally, an aluminum industry that's a viable in-
8 dustry located here. Whether located in this country or
9 abroad, I don't know, but aluminum is still a vital defense
10 product.

11 Q That completes your answer?

12 A I'd say the chemical industry would have been here, regard-
13 less. About 85% of the power you're talking about is sold to
14 aluminum, about 15%, principally to the chemical, nickel --
15 they'd have been here irrespective because they're either
16 based on local natural resources or on local markets, and
17 they would have been located in the region, irrespective.

18 Q When you look at the other regions around the country, Bernie,
19 and the way they look at their power loads and their resources
20 to meet the loads, the Pacific Northwest is really kind of
21 unique because of the relatively high dependence on hydro,
22 isn't that true?

23 A That's absolutely true.

24 Q And as a result of that, we find the pooling arrangements
25 that were more quickly or earlier and more intensively formed
26 in the Pacific Northwest?

27 A Because there were advantages because of the hydro. That's
28 absolutely right.

1 Q Hydro implies that kind of cooperation?

2 A Right.

3 Q For the record, maybe you'd better explain why that's true.

4 A Well, one of the reasons it was true in the early days, was
5 the diversity of stream flow. For example, on the main stem
6 of the Columbia river, there are very high flows in the
7 summer months, due to melting snow in the Rockies. The flows
8 go down very substantially in the winter months. On the
9 coastal streams, the high flows come with the heavy rains in
10 November and December. The flows are down in the summer
11 months because the snows on the coast range melt very quickly
12 and very early in the year; likewise, on the Snake River, it
13 is farther south in the snow fields and the snow from the
14 Snake melts earlier than the snow from the upper Columbia in
15 Canada, and so there are advantages to be gained by pooling
16 the hydro resources. You can increase your load carrying
17 capability by pooling and exchanging and that's exactly what
18 the utilities in the Northwest have done. Furthermore --
19 and this could be accomplished without hydro -- but at the
20 same time, they received the benefits of having a need for
21 lower reserves by interconnection, and these interconnections
22 weren't made just for the reserve aspect of it, they were made
23 primarily for the advantages of the diversity of the stream
24 flows.

25 Q There has been some previous testimony already in the hearing
26 on the Pacific Northwest Coordination Agreement that was
27 entered into in 1964, the 39-year agreement. Were you a par-
28 ticipant in the preparation of that agreement and the

1 negotiations that led to it?

2 A Yes. I wasn't in the detailed negotiations. People on my
3 staff were, but I was in the policy determinations and so
4 forth.

5 Q I take it that no state was a signatory to the agreement?

6 A No, it was just the power systems.

7 Q Were any state agencies represented as negotiators in the
8 process of reaching the agreement?

9 A No, no state agencies were represented as negotiators; how-
10 ever, Chuck Luce was administrator at that time. He and I
11 divided up between the two states, Washington and Oregon. I
12 kept the people in Oregon informed and met with them frequent-
13 ly on the intertie, the treaty, and the coordination agree-
14 ment; Chuck Luce did this for the State of Washington, so
15 there were frequent meetings in which these matters were dis-
16 cussed, but they weren't involved in the negotiations.

17 Q Whom did you contact in the State of Oregon, the public
18 utility commissioners?

19 A I first contacted Jonell Hill, but Senator Hatfield was then
20 Governor, and he preferred to get involved in it himself, and
21 so I met rather frequently with Governor Hatfield and members
22 of his staff.

23 Q Who took the assignment for keeping Montana informed?

24 A I kept -- and I should say Luce kept -- the delegation in-
25 formed. I think he had one or two meetings. I did not do
26 anything with Montana. I did have meetings with both the
27 staffs of the delegations, Senator Metcalf's staff, Senator
28 Mansfield's staff, and I can't remember now the congressman

1 from the western area who was involved -- anyway, we had
2 meetings with them in Washington frequently on this.

3 Q That was in Washington, D.C., you mean?

4 A Yes.

5 Q But your primary focus, personally, was the Oregon contact
6 and Chuck Luce's primary focus was Washington?

7 A We did have contacts, I might say, for most of this. The
8 State of Idaho wasn't particularly concerned because Idaho
9 Power Company was not part of the coordination agreement.
10 The State of Montana -- it included only western Montana --
11 which Montana Power Company serves, and there didn't seem to
12 be the interest, although there was the interest in the western
13 congressman, and there was interest by the senatorial delega-
14 tion on this.

15 Q In your written statement, also, you make reference to the
16 Bonneville hydro-thermal power program?

17 A Right.

18 Q There are phases 1 and 2 of that program, aren't there?

19 A Right.

20 Q And phase 1 of the program was to run through the year 1982?

21 A Approximately, yes.

22 Q And then phase 2 would pick up from that point on for another
23 decade or so?

24 A Not a decade, but in the late 80's.

25 Q At the moment, there is some study underway, is there not,
26 with respect to the environmental impact of the phase 2 pro-
27 gram?

28 A That's right. Bonneville is preparing an environmental impact

1 statement on this.

2 Q Were you involved at all on that before you left Bonneville?

3 A Not the environmental impact statement, no. The environmen-
4 tal impact statement was started to be prepared as a result
5 of a decision in the case of Port of Astoria versus Bonne-
6 ville Alumax, and that wasn't until September 1975 after I
7 had left Bonneville.

8 Q What seems to be the issue on the phase 2 Bonneville hydro-
9 thermal power program?

10 A I think the main problem is the question of the policy of
11 the impact on the environment under the National Environmen-
12 tal Policy Act. The question was whether a programmatic --
13 Bonneville is not going to be building any of the plants in-
14 volved here, and Bonneville does prepare a separate environ-
15 mental impact statement on each construction project that it
16 has. The question was whether an environmental impact state-
17 ment has to be prepared on the program itself rather than
18 just the construction of the project, including the indirect
19 effects, and Judge Scopall's decision was to the effect that
20 the National Environmental Policy Act required such a prepara-
21 tion, so Bonneville is now in the process of preparing such
22 a statement.

23 Q Were you involved at all in that litigation as a consultant
24 to any of your clients?

25 A Yes, Alumax is one of the potential industrial customers,
26 and they are one of my clients, and I testified in the hearing
27 relative to the Alumax contract and the nature of the proposed
28 new contract relative to phase 2.

1 Q Now, the Colstrip units, I take it, were part of phase 1 of
2 the hydro-thermal program?

3 A That's right.

4 Q And Exhibit 2-A, which Mr. Bellingham mentioned would be
5 offered in connection with your testimony, refers to units
6 that, generally speaking, were contemplated within phase 1,
7 is that correct?

8 A Yes. The only ones that are phase 2 there are WPPS 4-WNP,
9 which is Washington Public Power Supply System, Nuclear
10 Plants, 4 and 5, Pebble Springs 2, Skagit 1 and 2, and
11 Boardman are part of phase 2.

12 Q Getting a little bit ahead of our story, I suppose, I was in-
13 terested in the date that was listed for Boardman Coal, 1980,
14 which is within the time frame of the phase 1 program, isn't
15 it?

16 A That's correct.

17 Q How does that happen to be a phase 2 project if it's within
18 the time frame of phase 1?

19 A In the phase 1 original schedule for the plants, we assumed
20 that, based on studies made and recommendations of the various
21 architects-engineers, these plants could be built in a certain
22 time frame. Trojan, for example, was originally scheduled to
23 be in operation in 1974. WPPS No. 2 was originally scheduled
24 to be in operation in 1978. I'm not referring now to the pre-
25 vious Exhibit 2-A, I'm talking about the original intentions
26 here. Pebble Springs was scheduled to be in operation in
27 1979, the No. 1 unit. Well, we found that due to various
28 reasons, these plants could not be built on the schedules

1 that were originally anticipated in phase 1, and this left
2 us with a substantial deficit. Now, to make up this deficit,
3 several things were done. One, of course, the first thing we
4 did, was to try and see if we could get additional power to
5 make up the deficiency. Since Portland General Electric was
6 involved, particularly in Pebble Springs No. 1, which was
7 one of the large reasons for a deficit, they decided that
8 they would try and build Boardman Coal originally, on a date
9 of 1979, and now in 1980 is the schedule, in order to make up
10 for the loss of Pebble Springs. Bonneville, which took the
11 power out of WPPS 2, WPPS 1, and 70% of WPPS 3, was found
12 with substantial deficits, and the reason for negotiating a
13 new contract with Bonneville, which is part of phase 2, which
14 is part of the phase 2 program, was to give the industries a
15 still lower grade of power so that Bonneville would avoid
16 the potential of breaching the contracts with the preference
17 customers.

18 Q Later on in your statement, you addressed the question of the
19 overestimation of load forecasts and the consequences of do-
20 ing that in contradistinction to underestimation of load fore-
21 casts. When you referred to the overestimated consequences,
22 you refer to wasted investment, excess expense, lower net re-
23 turns and unnecessarily higher power rates to the great dis-
24 satisfaction of the consumer. Can you explain for the record
25 how it is that overestimated load forecasts result in those
26 consequences?

27 A Well, I wouldn't say that they necessarily result in those
28 consequences in the Pacific Northwest. Let's look at two

1 sides of this, one, the side, if you cannot market the power,
2 and two, if you can market the power. If you cannot market
3 the power, what you could do would stretch out the plant.
4 Now, suppose that in one of these plants you have \$200,000,000
5 invested before you decide to stretch it out and let's suppose
6 that it's a plant built by one of the investing utilities,
7 you're probably looking at a capital cost of around -- of
8 interest during construction, including the equity and the
9 debt, and maybe around 12%, let's say, for illustration. Okay,
10 if that's \$200,000,000, that's \$24,000,000 a year added to
11 the cost plus the escalation of the plant in costs, so that
12 means additional costs when the plant comes into operation and
13 additional expenditures. All right, now let's look at the
14 other situation, where you go ahead with the plant and you
15 find that you can market the power. Now, as a result of the
16 Pacific Northwest-Pacific Southwest intertie, I feel that
17 within reason these plants can be marketed. We found this
18 year, for example, that aluminum production is way down be-
19 cause of adverse conditions in the market. If you look at
20 the Wall Street Journal of last week, you'll find that the
21 last quarterly reports of the aluminum industry show very re-
22 duced profits because of the problem of marketing, and we find
23 that the production is down about 500 average megawatts as
24 compared to capacity production, which was true a few years
25 ago. They had power that they had purchased from the Hanford
26 project to make up and some of their interruptable. Well,
27 they sold all this power this year in California, even though
28 we weren't sure of the production out at Hanford because of

1 some problems there with the turbines. Yet, on a sliding
2 scale basis, they were able to dispose of all that power.
3 The public systems had some of this power and they disposed
4 of it all, because in the additional costs of the nuclear
5 plants that we're talking about, coal-fired plants are still
6 below the incremental cost of oil and the California people
7 also, they're patriotic American citizens, they recognize the
8 problem of the oil imports, and if there was no saving to
9 them, I'm sure that they would, in order to save the oil im-
10 ports, purchase this power. We found no particular problem
11 in marketing it, and I think that this is true and will con-
12 tinue to be true because the California utilities, for years
13 and years to come, will have to depend rather extensively on
14 oil imports in order to meet their power requirements. They
15 have all these plants that have been built, some of them built
16 within the last five years.

17 Q And of course, with the increasing cost of oil, not to men-
18 tion the problem of the supply of oil, it's economically
19 b beneficial for them to buy power from a surplus situation
20 where it was produced by coal or nuclear fuel?

21 A Right, no question about it.

22 Q That has something to do with their patriotism, too, I
23 suppose?

24 A Well, I think that they would do this if it was just a trade-
25 off, and there's an advantage to having control of your own
26 plant, producing your own power, than getting it from the
27 outside.

28 Q I seem to recall that in your background you do not have

1 econometrics as one of your particularized skills, is that
2 right?

3 A Well, I did a little study in econometrics, but that was very
4 many years ago, and not recently.

5 Q In the course of your consultative work for the numerous cli-
6 ents who previously were customers of Bonneville, that you
7 described, have you had to address personally the question of
8 the effect of price elasticity on demand for energy?

9 A No, I have not. I have looked at this at Bonneville. We
10 have looked at this in relationship to Bonneville's rate in-
11 creases. We had a substantial rate increase in 1974.

12 Q There is a task force underway now, is there not, headed by
13 the chief economist of Bonneville, Mike Katz?

14 A There's a task force. Mike has been belonged to the Northwest
15 Regional Commission, which is a commission established by law
16 for the governors of Oregon, Washington, and Idaho, and they
17 have also asked Montana to participate with them, and a rep-
18 resentative of Montana has, I understand -- at the last
19 meeting of the Governors' Conference at which I was present,
20 a Montana representative was there, but under the legislation,
21 Montana, for some reason or another, was not included, but in
22 any event, they have some funds to make a general energy
23 study and they have hired Mike Katz, who has worked on environ-
24 mental matters with Bonneville, to head up this study, and
25 Mike is proceeding with this study. It's a study that will
26 take about two years. It not only has to deal with electric
27 power, it has to deal with all energy sources.

28 Q I didn't know you were present at the last meeting. That's

1 good, because I wanted to ask you what you knew of their de-
2 liberations. What do you understand to be the state of their
3 deliberations at this point? Have they just begun the study,
4 in effect?

5 A The study has just started. As a matter of fact, a scoping
6 study is being made by Mathematica, which is a private company
7 at Princeton. They had some studies, in which I participated,
8 here in December. They're supposed to be back in February,
9 Mathematica, and have their report on what they think the
10 scope of the study should be.

11 Q This sounds like the kind of regional planning of which you
12 have been a strong advocate for many years. Would you not
13 regard this as a rather salutary development?

14 A I think it's desirable.

15 Q You would expect, I take it, that the study will bear some
16 fruit?

17 A Hopefully.

18 Q And what would you expect to be some of the consequences of
19 the fruit born?

20 A Well, I think there are a number of things that the study can
21 indicate. One of them is the one you mentioned, of the rela-
22 tionship between prices and demand. Now, one of the things
23 that I point out in my testimony, I'm real concerned -- I
24 think we are underestimating loads because we're not taking
25 into account the substitution effects of high oil prices,
26 high natural gas prices.

27 Q That's called cross-elasticity, isn't it?

28 A Right. This is something I'm real concerned about because

1 my last year at Bonneville, I had so many people come into my
2 office talking about putting in electric boilers of industry
3 and substituting, and I might say that because of the power
4 situation, I made efforts to stop a lot of this, which I
5 think I was successful in doing, because it would have dis-
6 rupted the whole power situation if we had gone ahead on that
7 basis, although a lot of companies, small ones, are going
8 ahead with the substitution, residential customers are going
9 ahead with the substitution, and so forth. I think we have a
10 better feel of that with a more detailed study, which I think
11 was pointed out by Mr. Bredemeier, in his testimony. We
12 really don't have any real good data on it, because we haven't
13 had the experience previously of such a rapid increase in the
14 price of one type of energy relative to other types of energy.

15 A second thing that the governors were very concerned
16 about at the last meeting was the question of what happens
17 on an energy shortage. We've had to face that in the North-
18 west at Bonneville -- and I shouldn't say Bonneville alone,
19 but the whole Northwest. What happens when you get a short-
20 age like in 1973? Whom do you cut back, and more important,
21 what are the consequences of cutting it back? Now, you'd be
22 surprised at the consequences that we had come up in 1973
23 when we cut back substantially at Bonneville on industry. I
24 found that one of the first calls I had was an industry that
25 was starting up a magnesium plant in the Salt Lake area, and
26 they said, "If, because of your cutback of the production we
27 are going to be unable to start our plant when we're ready to
28 start it, can we swap some of our power for power from the

1 quarrying (?) plant?" I had a chemical plant in Los Angeles
2 call me and say that if they couldn't get the chemicals from
3 the northwest, they probably had 60 days operation, and they
4 thought they were going to go broke on account of it. We had
5 a large manufacturer, an aluminum fabricator, in the North-
6 west, who called and said he had about 15 days' supply left
7 and if he couldn't get some additional aluminum, he was going
8 to have to lay off a thousand workers. These consequences you
9 didn't know. Maybe if you had known them, you would have
10 tried to push other places and not cut back some of these in-
11 dustries. This is one of the things that Mike Katz will be
12 studying and which I think is very significant to know.

13 The other matter that came up at the Governor's meeting
14 was the question of procedures on cutting back in case of a
15 shortage. There was a presentation made at this last meeting
16 by Don Hodel, the administrator of Bonneville, on the basis
17 that it really doesn't appear to be a question of shortages
18 in the late 70's and early 80's, it's a question of how much
19 you're going to be short, because these plants are all being
20 delayed. Even though the load forecasts are down, the loss
21 to resources is greater because of the delays in the plants
22 and the loss of load, and the governors have concluded to set
23 up a task force to look at how the curtailment should be made,
24 because Oregon can't do this individually and Washington can't
25 do this individually. It's going to have to be done on a
26 regional basis. The power supply is handled on a regional
27 basis, we're all affected on a regional basis. As we point
28 out in the coordination agreement, we're all tied together on

1 a regional basis, and this is one of the works that will pro-
2 ceed -- it will proceed on a state basis and then on a co-
3 ordinated basis. I might just point out on this, since we're
4 talking about the problem in relation to curtailment, under a
5 recent law passed in the State of Oregon, the Department of
6 Energy is supposed to develop curtailment plans. I might say
7 that they haven't proceeded very far on this yet. They're be-
8 hind schedule, and I might also point out that I'm very much
9 interested in this because I'm Chairman of the state's Energy
10 Policy Review Committee, which is supposed to review these
11 plans and make recommendations to the Legislature on legisla-
12 tion, and I certainly -- and I have been discussing this, in-
13 cidentally, with Mike Katz -- as far as I'm concerned, I cer-
14 tainly don't want to make any recommendations to that committee
15 without coordination with Washington, Idaho, and Montana.

16 Q I find this a fascinating area. Let me ask you first, why
17 were you there at the last meeting? I'm delighted that you
18 were, but how did it happen that you were there?

19 A Well, I went largely because Mike Katz was going to make his
20 presentation. I have been working with Mike on the scoping
21 study and I went along largely because of Mike's presentation,
22 and also, I might say, I also went along because I knew that
23 Don was going to talk about the problems of curtailment and
24 as Chairman of the Oregon Energy Review Policy Committee, I'm
25 going to be considerably involved in recommendations on the
26 policy of curtailment, and I'm very much interested in this
27 being done on a regional basis rather than a state by state
28 basis.

1 Q I would suspect that if Don was going to be there, there was
2 another reason why you were present, because he wanted to re-
3 ly upon the rather substantial information that you might
4 have available?

5 A I didn't say a word.

6 Q Indeed, Bernie, it was true, was it not, that when I and my
7 law firm first became involved in the Colstrip project, it
8 was, of course, because of my personal association with you
9 and with Don Hodel, with whom I went to high school? I
10 called you to see if we could chat and Don thought it was a
11 very good idea that you be present at that time?

12 A Right.

13 Q I appreciated your being available. I want to ask a couple
14 of things about what you have just described on the question
15 of what happens when there is an energy shortage. In 1973,
16 when there was a forced curtailment because of some, at least
17 expected, low hydro, which it turned out rather quickly
18 solved itself by having a high hydro, did anybody go broke?

19 A Not that I know of, because these situations that I mentioned,
20 within two weeks we had so much rain that we had power avail-
21 able, and production started, and this one chemical company
22 in Los Angeles -- I couldn't speak for them because I never
23 heard from them further.

24 Q I suspect you would have, if they had gone broke?

25 A Well, I don't know. I told them there was nothing I could do
26 for them.

27 Q Probably a congressman from Southern California would have
28 been in touch with you. The other question I wanted to ask

1 you about, Bernie, was this question of procedure for how you
2 go about facing energy shortages when they occur. You men-
3 tioned that it was impossible for Oregon or Washington alone
4 to decide how it's going to get the problem solved?

5 A I wouldn't say it's impossible, but I would say that it's not
6 very workable.

7 Q And it's not desirable?

8 A Not desirable at all.

9 Q The same thing would be true for Montana or Idaho, would it
10 not?

11 A Right, it just wouldn't work.

12 Q And it would also be reasonable, would it not, to extend
13 that, if it were possible, beyond the Pacific Northwest, to
14 other regions here in the western part of the United States?

15 A It could be. It's not as essential, though, because there
16 isn't the same interrelationship. We talk about Montana, for
17 example. You have two of the major industries in Montana,
18 are served by Bonneville, and most of their service doesn't
19 come from resources in Montana, it comes from resources in the
20 West, it comes from Grand Coulee and Chief Joseph, and the
21 other projects, and the question is, how are you going to
22 handle those loads without relationship to the rest of the
23 state? You certainly aren't going to cut back ALCOA, in Van-
24 couver, and have Anaconda, in Montana, operating a hundred
25 percent, or vice versa.

26 Q Well, the Bonneville general area, which is fairly coterminous
27 with what the Pacific Northwest Coordination Agreement is
28 speaking to, does not stretch to all of the areas with which

1 there is presently interconnection; isn't that true?

2 A No, we have interconnections with California, for example.

3 Q Sure, there is interconnection down into Utah and Arizona,
4 and for that reason, there is some desirability, is there
5 not, to having that type of cross-regional relationship that
6 could speak to energy shortages when they occur?

7 A Yes. This came up, incidentally, with respect to the Arab
8 oil boycott in 1973, 1974. It was rather severe provisions
9 and it was necessary, for example, in the City of Los
10 Angeles, because they couldn't get oil. Fortunately, they
11 never had to carry these out, because the supply became so
12 large in the Northwest that, in effect, we bailed them out;
13 but in the meantime, they had some real soul-searching and
14 put through some regulations that were real stringent and
15 very difficult to -- their cutoff was mainly residential
16 customers.

17 MR. SHENKER: Mr. Bellingham will criticize me
18 because I don't have more copies of this available, but
19 I do offer DNR Exhibit number 21 for illustrative purposes.

20 HEARINGS EXAMINER: There being no objection, DNR
21 Exhibit number 21 will be admitted.

22 MR. SHENKER: And I would like to mark these
23 service areas of the Bonneville Power Administration,
24 which are in two parts; one being the operating public
25 agencies and cooperatives; the second, the private utili-
26 ties, as DNR Exhibit number 22. Make the first sheet
27 22-A and the second sheet 22-B.

28 Q These are the Bonneville lines and 22-A does describe the

1 public utilities and the cooperatives, and 22-B does describe
2 the private utilities?

3 A Right.

4 MR. SHENKER: I offer those.

5 MR. BELLINGHAM: No objection.

6 HEARING EXAMINER: Very well, Exhibit 22-A and B
7 will be admitted.

8 Q We can see by looking at Exhibit 22 of the Department of
9 Natural Resources that essentially, around the Continental
10 Divide in Montana, the area ends as far as Bonneville is
11 concerned?

12 A Bonneville's marketing area includes the Continental Divide
13 plus any cooperative within a hundred miles that serves both
14 inside and outside areas and has no generation of its own.

15 Q And it touches portions of Wyoming such as portions of Utah,
16 Nevada, and California?

17 A Yes. These follow the same rules. They're either in the
18 Columbia Basin or they serve both within or without and they
19 service areas within a hundred miles of the Columbia Basin
20 and their market area, and they have no generation at all.

21 Q Now, you adverted a little bit earlier, Bernie, to the poten-
22 tial concern on a breach of contract that Bonneville might
23 have with some of its industrial customers. In context, I
24 take it, that concern, was that as Bonneville faced the
25 mounting demand upon it with the customers that it had, it
26 realized the necessity for having to do something about its
27 available resources or do something about the call upon those
28 resources, from customers. What it chose to do, was both,

1 to see if you could expand the resources available, and to
2 adjust the relationships with your customers?

3 A Right.

4 Q Of course, breaches of contract are not lightly considered by
5 a federal agency, no more than by a private citizen, for that
6 matter? You have not yet, I take it, while you were with
7 Bonneville, and since then, as far as you know, breached any
8 contracts with your customers?

9 A No, and these contracts have not been concluded and will not
10 be able to be executed until such time as the environmental
11 impact statement referred to earlier is concluded.

12 Q In the process of adjusting the contractual relationship
13 with the customers, was it the practice of Bonneville to con-
14 sult with such agencies as the Pacific Northwest Commission,
15 the one of the three governors?

16 A We did not consult with the Pacific Northwest Commission,
17 but this program relating to the industrial contracts, I did
18 review -- I did this personally -- with the Public Utility
19 Commission in Oregon, Washington, and Idaho. I offered to do
20 this with Montana, Wyoming, and Nevada, because they were
21 affected, and they did not choose to do this. I did do it
22 also with the State of California's Public Utility Commission.

23 Q Also in your statement, Bernie, you referred to what looks to
24 me like kind of a scarey figure, 190,000 industrial jobs, and
25 I think a reading of that sentence -- that's on page 11, lines
26 25 and 26 -- could result in the inference that if Colstrip
27 isn't built, there are going to be 190,000 jobs lost. That
28 isn't what you mean, is it?

1 A What I mean is that if we have the same proportion of indus-
2 try on the same average ratio, that we will not be able to
3 serve an industry equivalent to the employment of about
4 190,000 people. We're already suffering on this, because in
5 the area we don't have the power. I might just say that re-
6 cently, a large chemical company had looked throughout the
7 Northwest, contacting a large number of power suppliers, for
8 45 megawatts for a plant that would produce products that
9 would be principally used out here on the West Coast, and was
10 unable to secure a power supply. They would have employed
11 about 600 people. Now, if the power supply had been available,
12 you'd have had those 600 jobs plus you'd have had jobs in
13 other places, and what I'm saying here is that the power
14 equivalent to this, if we don't have it in the region, we're
15 not going to be able to supply the jobs that are necessary,
16 not for new people coming in, but for our existing population,
17 because, because of our age groups, we're going to need, in
18 a study made by Bonneville over the next 20 years, in the
19 region, about 800,000 more jobs than we have today.

20 Q Let me make sure I understand in context -- Colstrip 3 and 4,
21 after all, are only going to generate 1400 megawatts?

22 A That's right.

23 Q That doesn't provide jobs for 190,000 people, does it?

24 A About 700 megawatts, on the average, would be used by indus-
25 try. In the area -- and this is about the same area in the
26 United States as a whole -- about 50% of your power, your
27 electric power, goes to industrial use of one nature or an-
28 other, and what I'm saying here is, through the economy, the

1 average of half of Colstrip is equivalent to about 190,000
2 jobs.

3 Q Well, let me ask you the question in this way. If you had all
4 of Colstrip 3 devoted to industrial development, would that
5 create 190,000 jobs?

6 A In itself, it doesn't create the jobs, but the energy avail-
7 able, if there is demand -- let's put it a different way.
8 You need a certain amount of energy in the area in order to
9 supply the industry which would provide the jobs. The equiva-
10 lent of half of Colstrip, if, in the future, jobs have the
11 same ratio to energy as they have now -- you need the same
12 amount of kilowatt hours per worker or employee -- it would
13 be equivalent to about 190,000 workers.

14 Q Maybe I can get at the same question from a different perspec-
15 tive. If you look at your Exhibit No. 2-A, is that not a way
16 of saying that with the use of 1130 megawatts from Trojan,
17 1400 megawatts from Colstrip 3 and 4, 1500 megawatts from
18 Bridger, about 5,000 megawatts from WPPS, 2500 megawatts from
19 Pebble Springs, 2500 megawatts from Skagit, and 500 megawatts
20 from Boardman, you will then be looking at the prospect for
21 providing the 800,000 jobs that will be necessary?

22 A That's right, that's a good statement of it.

23 Q So it's not the case that Colstrip 3 and 4, all by itself,
24 will make or break the economy of the Pacific Northwest?

25 A No. All I was putting this in for was to show the relation-
26 ship between jobs and energy. I could have stated it a
27 different way. I think you stated it, and you stated it very
28 well.

1 Q Now, that same general subject is discussed by you later in
2 your statement when you talk about the difference between
3 labor intensivity and energy intensivity of industrial con-
4 cerns, and you use what seems to me a very clear example,
5 that the aluminum companies are energy intensive and the elec-
6 tronics industry is labor intensive?

7 A Right.

8 Q In fact, in the aluminum industry, the general rule of thumb
9 statement of explanation is that the production of aluminum
10 is power?

11 A Right.

12 Q I take it, that for economic development planning purposes
13 here throughout the regions in which we are involved, it would
14 be useful to see if we could not stimulate the development of
15 labor intensive industry?

16 A No question about it, but --

17 Q That is related, of course, to the necessity of having those
18 energy intensive industries which are necessary to produce the
19 raw materials?

20 A Right. I might say, Arden, that although I mentioned this
21 industry has been turned down and other industries have been
22 turned down, there hasn't been any big problem with the small
23 industries. When I'm talking about small, people need about
24 100 kilowatts or something of that nature. We start getting
25 up into larger numbers and you get into a few thousand, for
26 example, one of 15,000 that I know of, was having difficulty
27 locating.

28 Q You also mentioned the comparative growth in the Pacific

1 Northwest, the region in which you're doing the consulting,
2 as a national phenomenon. It's true, is it not, that the
3 1974 comparison to 1973 shows a flattening, or decrease,
4 generally?

5 A That's right.

6 Q Have you made a particular study of the service areas of the
7 applicants in this particular project to see how, as a whole,
8 they compare statistically?

9 A No, I have not.

10 Q You do mention that you have studied the results of the effects
11 of conservation in Sweden?

12 A Right.

13 Q Did you do that personally in Sweden?

14 A Yes. I did it in Sweden and I did it in other European
15 countries, too. I did it in England.

16 Q Isn't the standard of living which a nation or a society may
17 have relevant to the extent to which conservation can have an
18 effect upon the use of energy?

19 A Yes. There are several reasons why I particularly looked at
20 Sweden. Their standard of living is comparable to ours; also,
21 they use electric energy in about the same proportion as ours.
22 They are dependent on hydro, the same as we are here in the
23 Northwest. They use large amounts of electricity in their
24 homes. They have a lot of electric heating. They use large
25 amounts in industry. I also looked, I might say -- the one
26 I particularly have differences -- in Great Britain. I might
27 just say that in Sweden, due to a drop condition that occurred
28 in 1969, they put through some very extensive conservation

1 measures. They have voluntary conservation. I might say
2 that voluntary conservation did not get the amount of reduc-
3 tion that they found necessary. They then put in mandatory
4 conservation with respect to industrial customers and com-
5 mercial customers. In other words, they had a requirement
6 that they reduce the amount of consumption with a very large
7 penalty. They charged them twenty-five cents a kilowatt hour
8 compared to a rate of about six mils per kilowatt hour if
9 they went over, and I might say there's only one firm that
10 went over. Incidentally, it's amusing because it was the one
11 firm that was manufacturing poles for the Swedish Power Board.
12 They went over the demand, and faced the penalty. Residential
13 customers, they found they were getting about a 5% conserva-
14 tion. Earlier, they got more. They felt, as water conditions
15 improved, they couldn't continue with 5%, just as we have in
16 the Northwest. People look outside the window, they see it
17 raining, they say, "The problem's over."

18 Q We had 7%, as I recall.

19 A We had as much as 8, yes, 7 and 8%. In Sweden they have the
20 additional advantage in saying that if they didn't get this
21 amount of conservation, they were going to put through manda-
22 tory controls, and in industry, actually, most industries
23 went below the level, and I might also say, there was not an
24 appreciable effect upon production. They found ways to reduce
25 it, just like we did in the Northwest, cutting off lights.
26 For example, during the curtailments we had in 1952 in the
27 Northwest, talking to one of the lumber people, he was telling
28 me that they used to leave the saws -- it was a planing mill--

1 operating all the time because it was cheaper than to waste
2 the labor turning it off. When he had to cut back, he turned
3 off the switch and paid the extra labor costs, and turned it
4 on again, and these are the sort of things that happen in in-
5 dustry.

6 Q When did you do your study in Sweden?

7 A 1973.

8 Q Before or after the curtailment problem that seemed to arise
9 in the Pacific Northwest?

10 A It was during the curtailment problem that I was investigat-
11 ing. It was in the early part of the period in which we
12 were facing curtailment -- our reservoirs didn't fill.

13 Q I have the recollection that Governor McCall, in Oregon,
14 referred to some of the steps taken in Sweden as a model for
15 some of the suggestions that he made?

16 A Yes, I had prepared a paper on this, and I had reviewed it
17 with the Governors of both Oregon and Washington, or with
18 their staffs, as to what I had found out in Sweden and Great
19 Britain. In Great Britain, in the coal strike in 1972, and
20 after I had been there in 1974, they said they wouldn't even
21 try a conservation program. They didn't think they would get
22 to first base on it, and they used rotating blackouts. Now,
23 unfortunately, in 1972, they had schedules as to what sections
24 were going to be out at what times, and they found that people
25 were wiser than they thought. A manufacturing plant, for ex-
26 ample, which was going to be out from two to six, they went
27 ahead and closed their plant down from two to six and worked
28 from six to ten, so in 1974 -- this is what they told me when

1 I reviewed this with them -- they put limits on the hours in
2 which the plants could operate.

3 A The British probably still remember their war-time blackouts.

4 Q In your statement further, Bernie, you refer to the extent
5 to which hydro provides a portion of the load. Do I correct-
6 ly infer that when you describe the extent to which hydro
7 does service the load, you mean energy as well as peak?

8 A I'm talking about just energy.

9 Q You're talking specifically about energy?

10 A Yes. Our peak in the Northwest goes up and down, depending
11 on weather conditions. In the Northwest Power Pool, for
12 every degree change in temperature, the load goes up about
13 150 megawatts, so when we have a 20-degree drop in temperature
14 like we had in December 1972, the load in the power pool went
15 up about 3,000 megawatts, and you've got to look at tempera-
16 ture situations on peak. As a matter of fact, some studies
17 that we made in the Bonneville service area to Bonneville
18 customers indicated that during the cold snap in December
19 1972, half of the total peak load in the area was to serve
20 electric heat.

21 Q When you say one degree drop in temperature, that's going to
22 be a drop from something. What's the degree?

23 A Our normal winter temperatures. It runs in -- not exactly
24 in a straight line but pretty well on a straight line. For
25 example, if the temperatures -- and I don't remember what
26 they were -- I think in December 1972 we were operating at
27 about 40 degrees, and all of a sudden, in a short time, it
28 went down to about 20, and your load in the Bonneville area

1 went up about 100,000 kilowatts and Bonneville had a require-
2 ment that went up about 2,000 megawatts.

3 Q In your statement, also, Bernie, you refer to the fact that
4 the Montana Power Company has been a net importer rather than
5 exporter of power recently, maybe for some time, but the
6 State of Montana as a whole has been a substantial net ex-
7 porter over the years, has it not?

8 A Well, it depends upon what years you're looking at and what
9 areas. The Bureau of Reclamation has exported power from the
10 eastern part of the state to North Dakota and South Dakota.
11 It's all part of the Missouri Basin. The Missouri Basin is
12 looked at as a unit, the same as the Columbia Basin is looked
13 at as a unit. Of course, one of the big reasons, as you point
14 out earlier, for the net import in Montana, are the large in-
15 dustries, the two large industries.

16 Q Do you know how much, in terms of megawattage, is exported,
17 from the entire State of Montana?

18 A No, I don't know the figures on that. The reason I don't
19 know, I haven't paid too much attention to the Missouri Basin,
20 where it goes, and to what particular states.

21 Q You also described in your statement the percentage which
22 Colstrip units 1 through 4 will represent as the area power
23 capacity with the completion of the phase 2 Bonneville hydro-
24 thermal power program. What will the Colstrip units 3 and 4
25 alone represent as a percentage of the entire area?

26 A Of the entire area? That is 1400 megawatts out of -- when we
27 complete the two projects, we'll have -- it would represent
28 less than 5%.

1 Q Well, we know it would be less than 5% because we're knocking
2 out Colstrip 1 and 2.

3 A Well, you're knocking a good deal out, so you're talking
4 about 4%.

5 Q When you refer to the entire area, you're referring to the
6 area as determined by the boundaries on the exhibit?

7 A The Bonneville service area.

8 Q As you look at the development of thermal or fossil fuel-
9 fired units, based upon your experience, Bernie, over the
10 years, wouldn't you think that the coal-fired stations that
11 appear on the Applicants' Exhibit No. 2-A will be about the
12 probable end of the line for the development of coal-fired
13 units?

14 A I really don't know. It depends on what happens on, I think,
15 national and state legislation with regard to strip-mining,
16 with regard to future controls. Certainly, the Federal Ener-
17 gy Administration in the Project Independence hopes that by
18 at least the early 1980's, we will be converting mostly to
19 nuclear generation rather than using coal generation, but
20 this depends, really, on a number of factors. For example, I
21 think there are 24 states now that have bills either in the
22 legislature or on initiative relative to nuclear moratoriums.
23 If they pass in a number of states, there will be a greater
24 demand for coal. If they don't -- let's say they're all de-
25 feated -- I don't think there's any question that most of the
26 future will be nuclear.

27 Q And in that event, you might look at the present planned
28 development of the coal-fired plants as sort of the end of

1 the flight of the albatross, so to speak?

2 A It could very well be.

3 Q I'd like to have you put back on your Bonneville hat in per-
4 spective and some recollections, as well. It is the case, is
5 it not, for some years, that Bonneville has been looking for
6 the right opportunity to distribute effectively power to the
7 West as we look at it from Montana?

8 A No. Let me explain. Bonneville has no intention of expand-
9 ing its marketing agency. Bonneville has been under pressure
10 from the Montana delegation to serve the cooperatives in the
11 eastern part of the state. Now, while I was still working at
12 Bonneville, I think I worked out with the Montana delegation
13 and the cooperatives a satisfactory compromise on the problem,
14 which doesn't do any violence to Bonneville's marketing area
15 or the marketing area set up under public law. Now, under
16 public law, the Hungry Horse reservation is available for the
17 entire State of Montana. This compromise that I worked out that
18 was acceptable to the Montana delegation was that Bonneville
19 would serve the Glacier Cooperative, and Bonneville has now
20 executed contracts with Glacier that this service would take
21 place at a time -- at such time as the Bureau of Reclamation
22 no longer had surplus power so that we'd gradually take over
23 the load so we wouldn't leave the Bureau of Reclamation with
24 surplus power, because Bonneville can market all of its power.
25 In turn, the power that was available from Glacier will go to
26 the Montana G and T, which will assist the other cooperatives
27 in eastern Montana, and I think that as far as the Montana
28 delegation is concerned, that resolved this question with

1 regard to service area east of the Continental Divide as far
2 as Bonneville is concerned. Now, Glacier serves both within
3 and out the region, is within a hundred miles of the Con-
4 tinental Divide, and doesn't have any generation, so I felt
5 that we could do this and justify doing it without changing
6 the basic method of service, the basic geographical ratio of
7 service.

8 Q That wasn't the question that I was going to put, but now
9 that I know the answer, I could frame that question.

10 A I think you might be referring to something else now.

11 Q I am. I'm referring to transmission, and it has been the case
12 that for some years, Bonneville has had in its budget projec-
13 tions the plan to build 500 kv transmission where it does not
14 exist starting at Hot Springs and going west.

15 A Yes. Let me go into several aspects of this. The history
16 goes way back to the early 60's when some studies were made
17 of the interconnections, and these were done at the request,
18 incidentally, of the Montana delegation. I'd better start
19 back again. We worked on the California intertie, and the
20 question was raised by the Montana delegation, wouldn't a
21 Missouri tie also be beneficial and shouldn't it be examined,
22 and we agreed to examine it and we did and we looked at inter-
23 change between the Missouri Basin, and I might say that of
24 course, the Missouri Basin has surplus about the same time
25 that we do in the Northwest. They're just on the other side
26 of the Rocky Mountains and they get the snow about the same
27 time that we get it in the other area. We looked at time di-
28 versity and as a major consequence of this, we looked at the

1 intertie. We then looked further, at the request, again, of
2 the Montana delegation, of tying in some large coal plants,
3 whether that would make the generation transmission feasible.
4 Then, when Colstrip came up, since Colstrip was part of phase
5 1 of the hydro-thermal program approved by the Congressional
6 Appropriations Committee, Bonneville, as part of the commit-
7 ments it made to build the major transmission within the
8 Bonneville service area, Bonneville has asked for -- and in
9 the budget, I understand -- I haven't seen the budget yet for
10 1976 -- but I understand the President's budget that was re-
11 leased this week, there's provision for a 500 kv -- I guess
12 Ron Wilkerson could testify more on that later -- but anyway,
13 there's provision for a 500 kv line to go to the border of
14 some place in that area, and the companies would have to build
15 outside of the Bonneville service area, but Bonneville would
16 tie into its own generation and build the connecting 500 kv
17 line, if that's what you're referring to. This was part of
18 the understanding on phase 1 of the hydro-thermal program
19 that if the utilities request it, Bonneville would attempt to
20 build the 500 kv, but not build lower voltage within the
21 service area. We would not go outside the service area.

22 Q And Bonneville, also, as I understand it, is endeavoring to
23 make the proper hookup for the transmission of power to the
24 south of Montana from Wyoming into the Pacific northwest
25 states, too?

26 A Well, at the present time, I believe Pacific Power and Light
27 is planning to build a transmission line from southern Idaho
28 to the Klamath Falls area Malin substation which would hook

1 up the Wyoming generation to the Northwest.

2 Q Of course, Bonneville interties with the Malin substation
3 itself?

4 A Oh, yes. This would tie into the intertie lines between the
5 Pacific Northwest and the Pacific Southwest.

6 Q The only other question I wanted to ask you on the trans-
7 mission line aspect is that I recall that it's your view that
8 DC transmission would be preferable to AC transmission if the
9 load being transmitted were around 5,000 megawatts?

10 A From the Colstrip area, the answer is yes, and I'm basing
11 this on some earlier studies that were made at my request by
12 Bonneville's engineering department.

13 Q You know that a large part of the service area of the Montana
14 Power Company is in eastern Montana outside the Bonneville
15 area?

16 A Right.

17 Q Does Bonneville intertie with that?

18 A The only intertie Bonneville has with the Montana Power Com-
19 pany is in the western part of Montana, nothing in eastern
20 Montana.

21 Q Except to the extent that the Montana Power Company may inter-
22 tie east?

23 A That's right. As a matter of fact, if you're looking at inter-
24 ties, your intertie goes clean across the country. It's a
25 load intertie, and I might say that a few years ago, when we
26 had this blackout in the Pennsylvania and Maryland area, it
27 shows up on Bonneville's charts. There was an effect on the
28 Northwest system because of the interconnection between the

1 Missouri Basin and the Pacific northwest systems.

2 Q When we look at the Pacific Northwest as a whole and find
3 deficits in any years from now into the future, a substantial
4 part of the deficit situation would be a Bonneville deficit,
5 would it not?

6 A Yes, and some of that deficit -- as I mentioned earlier,
7 Bonneville has rights to cut back on the industrial loads.
8 Some it does not, and that's the problem we're trying to
9 correct. If the new contracts with industry were executed,
10 then Bonneville would have rights to curtail and would be in
11 a position of not being concerned about breaching contracts.

12 Q And it wouldn't be in a deficit situation under the new con-
13 tracts?

14 A It would be in a deficit situation, but not a breach of con-
15 tract. They wouldn't have enough power to meet the require-
16 ments, but we'd have the rights to curtail.

17 Q In keeping with the contracts, you'd be able to supply what-
18 ever you had?

19 A Right.

20 Q Of the 4,000,000 kw hours that BPA now sells to industry --
21 I said hours -- kilowatts is the term -- the BPA now sells to
22 industry, about half of it can be curtailed or restricted at
23 the moment?

24 A Under the proposed new contracts, half can be restricted.
25 This includes the Alumax load, which is not in operation yet
26 and depends on this environmental impact statement, among
27 other things, before it will be in operation.

28 Q I probably should have asked Mr. Nogle the question when he

1 was here, since he is the compiler of all the information
2 for the West Group Forecast, but I think maybe you know the
3 answer for us, as well. The West Group Forecast, in the past
4 has excluded the Montana Power Company, and I understand
5 that the Montana Power Company will be included in the
6 future?

7 A I understand that they will be. I don't know whether it will
8 be in this year's forecast, but it will be, yes.

9 Q The Idaho Power Company, the Utah Power and Light Company,
10 and two Canadian companies which interconnect with the sys-
11 tems in the Pacific Northwest have also been excluded in the
12 past. Do you know whether they will be included now?

13 A No. You have laws in Canada and you have laws in the United
14 States that there is no interchange of power other than sur-
15 plus power between Canada and the United States. I don't
16 know any reason for including them. There's always been a
17 question on Montana, on the Montana Power Company, because in
18 the West Group, it's part of the coordination arrangement.
19 The East Group is not, and certainly, with the tie-in of the
20 Colstrip 1 and 2 plants that are going to be in operation
21 this year, it should be included as part of the total. Idaho
22 Power Company will be participating in some of these plants,
23 too, and certainly now it should be looked at and include
24 them.

25 Q Do you know whether they will be included?

26 A I don't think there are any plans at the moment to do it, but
27 I think in the future we can look at including them.

28 Q How about the Utah Power and Light Company?

1 A Utah Power and Light Company operate in a little different
2 area, and I would doubt that they would be included.

3 Q We've talked some of the new contracts underway with the in-
4 dustrial customers of Bonneville. Those contracts also have
5 another interesting provision, do they not, in which the in-
6 dustries themselves will be asked to use their credit to
7 finance some of the reserves in the area?

8 A That's right.

9 Q Would you explain that for the record, please?

10 A As part of phase 1, as I mentioned earlier, we ran into a
11 problem of inadequate reserves because of delays in plants
12 and because of inability of the plants, at least initially,
13 to operate at capacity; at least, we ran into that at Cen-
14 tralia. Whether we ran into it at other plants, I don't know.
15 One of the provisions was to get some additional reserves in-
16 to the system to take care of the regional problem. Now,
17 under phase 2, we take care of the Bonneville problem by re-
18 ducing industries to half interruptable, in effect. We don't
19 take care of the regional problem, the problem of the investor-
20 owned utilities or the public system utility plants. We
21 found that it would be straining credit of the investor-owned
22 utilities and the public systems to finance reserve plants,
23 and we found from the financial people, they wanted an assured
24 market before they would underwrite the bonds, so what we
25 worked out was a provision that the industries, up to one-
26 fourth of their load, would agree to purchase the output of
27 this so-called reserve plant. It's a thousand megawatts,
28 roughly, we're talking about on a fourth, to take and pay for

1 it, whether they could use it or not, and the industries have
2 agreed to do this as part of this contract arrangement. This
3 would put into the area -- if we can get the plant scheduled --
4 so far, we're having difficulty finding the schedules for
5 the plants and whether we'll get the surplus or not, I don't
6 know -- but in any event, it would provide a basis that you
7 could finance the plants.

8 Q As long as you mentioned financing, let's talk about that a
9 little bit. The ability of some of the major utilities, in-
10 vestor-owned utilities, particularly, in the Pacific North-
11 west, properly to finance their projects, has been a continu-
12 ing substantial problem in recent years, has it not?

13 A It's been a problem throughout the country. I think the big
14 problem is this -- the utilities in the Northwest haven't had
15 the problems that some of the other areas have had, because
16 in the Northwest, the public service companies have handled
17 the applications for rate increases, and as was pointed out
18 yesterday in Mr. Bredemeier's testimony, rather rapidly,
19 probably not as rapidly as the utility companies would like,
20 but sufficiently to provide for the financing, but the problem
21 that they have faced is one of high interest rates, of having
22 to finance with equity at a time when their stock was below
23 book value and at times when it was a little bit above book
24 value, and no company wants to finance equity with its stock
25 below book value or even close to book value, because you're
26 not taking into account the increased value due to inflation
27 and so forth, and so there have been problems. I think if
28 you look at the interest rates, Pacific Power and Light just

1 issued some bonds the other day at 10% interest, and Portland
2 General Electric was 10-3/4% interest, I think, about a month
3 ago.

4 Q And those are much higher than they would like to spend, of
5 course?

6 A That means higher rates, which creates problems.

7 Q While you were at Bonneville, you had a function in trying to
8 persuade the various utilities who were members of the West
9 Group Forecast to obtain some uniformity in the methodologies
10 by which they would make their individual forecasts, isn't
11 that true?

12 A Right.

13 Q And since leaving Bonneville, I take it you have continued to
14 work on those efforts to try and assist the companies in their
15 methodologies?

16 A Right.

17 Q Are you making some progress?

18 A Well, I think we have made progress. I think that all utili-
19 ties now forecast their peak load on the same basis, normal
20 winter cold weather, not the extremely cold weather. I think
21 that we have resolved, at least for the time being, the ques-
22 tion of the amount of reserves, not including the industrial
23 loads reserves, which are separate, but the other reserves
24 that we should have in the region in order to take care of
25 the outages, maintenance, and so forth, and so I think that
26 there's progress being made. I'm still concerned about avail-
27 ability factors. We have made adjustments in the availability
28 factors. I'm concerned because of the national studies that

1 indicate, for example, that both coal-fired plants and
2 nuclear plants, the average availability in these large units
3 is about 70% of the time. We're using in our forecasts 60%
4 the first year and 75% the second year, and thereafter. Some
5 utilities in the country now are building up more gradually
6 on their availability factor. Some are increasing their re-
7 serves of energy to take into account the fact that you may
8 have difficulty in starting up and may not be able to get to
9 full capacity in a year. These are some of the things that I
10 think we have to look at first.

11 Q What suggestions have you already made to the companies to
12 improve their methodologies in load forecasting?

13 A One of the things that I have suggested through the past, and
14 I haven't really done anything recently, is to examine these
15 availability factors, and there is a task force that's been
16 working on it.

17 Q I take it that one of the problems with having different
18 methodologies for load forecasting is, if all the individual
19 inputs to an overall load forecast use different methodologies,
20 then you don't have an accurate and reliable forecast.

21 A You can't add them. You can't get a regional picture, and we
22 operate as a region.

23 HEARING EXAMINER: Let's recess for 15 minutes.

24 HEARING RECESSED BRIEFLY AT 10:08 A.M.

1 Following a brief recess, the hearing was reconvened at
2 10:35 A.M.

3
4 CONTINUATION OF EXAMINATION OF BERNARD GOLDHAMMER

5 Cross, by Department of Natural Resources and Conservation

6 By Mr. Shenker (continuing):

7 Q I believe we were talking just before the recess on methodolo-
8 gies for load forecasting. I take it that it's pretty well
9 established in the utility industry today that the use of
10 historical growth in the past as a sole basis for estimating
11 future demand should be discharged?

12 A Right.

13 Q You also addressed the question of what might be done in the
14 event of overestimation of a load?

15 A Right.

16 Q Would a correct general statement be that if a utility or a
17 group of utilities recognized that they have overestimated
18 their load, then the issue could be, not the discontinuation
19 of the facility which they had intended, but the deferment
20 of the facility over some period of time?

21 A That's right.

22 Q And here in the Pacific Northwest, or there in the Pacific
23 Northwest, where the perspective properly is, while load fore-
24 casts have been decreased in the last couple of years, the
25 resources have been deferred somewhat more rapidly than the
26 loads have been decreased, is that right?

27 A I would say they've been delayed for various reasons. I
28 don't think there was a conscious deferral, but just the

1 problems that come up in construction and so forth that cause
2 the delays.

3 Q In some cases, there was conscious deferral as a result of
4 the determination that the loads were less or the financing
5 was too great?

6 A I think probably that might be true of Pebble Springs, but I
7 don't think with any of the others.

8 Q I think Don Frisbee addressed that for Bridger when he rolled
9 back unit No. 4?

10 A That could be.

11 Q You talked some before the recess, Bernie, on the interconnec-
12 tion between systems. I think you said that the Pennsylvania
13 use of energy showed up on Bonneville's chart at one point.
14 It is a correct general statement, is it not, that the system
15 with which any company in the Pacific Northwest Pool has a
16 connection is available to all of the rest of the companies
17 in the Pacific Northwest?

18 A For surplus capacity, yes.

19 Q In the course of your consulting work, or previously, while
20 you were with Bonneville, did you get into the question of
21 looking at the alternative of slurry pipelines for the de-
22 livery of coal to generating stations near load centers?

23 A I really didn't get into it. I had some discussions with one
24 company that was considering a slurry pipeline, and that was
25 while I was still at Bonneville, and I have had no contacts
26 since then, and this contact was just an idea he had of a
27 slurry pipeline from Utah to the Pacific Northwest.

28 Q Do you know if anything came of that?

1 A So far as I know, nothing has come of it. It was a very
2 complicated project.

3 Q Still underway in discussion?

4 A I don't know whether they're still discussing it or not. The
5 complication was that you had to find some place for the
6 water and you had to clean the water, and this was the prob-
7 lem that they were struggling with when they discussed it
8 with me.

9 Q Do you know of Bechtel's work on the development of the
10 slurry pipeline?

11 A Just in a general way. I know this controversy that's going
12 on in the Southeast, the proposed pipeline as versus a rail-
13 road transmission.

14 Q In the Wyoming area, they're looking at that now?

15 A Yes, to Arkansas, I think, or some place there in the south.

16 Q You had addressed earlier the concern that you had that you
17 have mentioned to some of your consulting clients, the utili-
18 ties in the Northwest who were previously Bonneville customers,
19 on the availability of plants. Is that related to, or the
20 same thing as the reliability of the coal-fired and nuclear
21 electric generating stations being substantially below design
22 levels? Is that what you're talking about?

23 A Yes, it's the same problem. It's how much of the time the
24 plant can be in service. If it's not going to be in service
25 as much as anticipated, then you need more generation, more
26 energy, and I was particularly concerned about this as a re-
27 sult of two things, one, our own experience with Centralia,
28 where in the early years Bonneville got the bulk of the power

1 out of it, and two, the studies that have been made on a
2 national basis on the availability factors of the large plants
3 in operation.

4 Q You know that the Federal Energy Administration has been very
5 concerned about that same problem?

6 A Yes.

7 Q They phrase it in terms of a serious concern that the large
8 coal-fired and nuclear generating plants are below design
9 levels?

10 A Yes.

11 Q Do you know Jack Robertson, the Regional Administrator of the
12 EPA?

13 A I've met him, but I can't say that I know him, no.

14 Q Were you familiar with the view that he has expressed public-
15 ly as the Regional Administrator of the Environmental Protec-
16 tion Agency, that conservation of energy would provide the
17 opportunity to kind of catch our breath to see what's the best
18 way we can devote ourselves to meeting our energy problems?

19 A I'm not familiar with this.

20 Q Have you heard that view expressed by other people?

21 A Yes.

22 Q Do you think that conservation of energy will have some
23 beneficial effect for doing just that?

24 A Not quite. I think that in the first place, I would say that
25 conservation is very important and should be pushed to the ex-
26 tent that it's possible, but I think in the electrical field,
27 for example, electric utilities, about the most you can look
28 at on a conservation program is maybe a year's load growth.

1 For example, we had some experiences in 1973. Sweden has
2 had experiences with conservation, and I think that these ex-
3 periences indicate that about a year's load growth is all
4 that you can anticipate, and you've got to continue with con-
5 servation. It's not, you know, a one-shot program; otherwise,
6 for example, you have people turn their thermostats down. If
7 you relax, they tend to put them back up again, but there's
8 a level at which you find that people get cold. They feel
9 their health is concerned -- that's just one illustration --
10 and they won't turn it down below that level, and that's one
11 of the big consumers in the Northwest, the electric heat.
12 We find an area where industry, if it goes below a level, it
13 seriously affects production, and so it won't go below a cer-
14 tain level on conservation.

15 Q You mentioned Sweden again. I meant to ask you when you were
16 talking about the Swedish comparison, do you know what the
17 per capita consumption of energy figures are in Sweden as com-
18 pared to any place here in the United States?

19 A I don't remember the exact figures, but I remember when I
20 went over there and we were discussing it, they were comparable
21 to the Pacific Northwest, considerably higher on electric en-
22 ergy than the United States average. They were comparable to
23 the averages in the Pacific Northwest.

24 Q On a per capita basis?

25 A A per capita basis, right, and for the reasons I mentioned.
26 They have high use because of electric heat and they have
27 electro-process industries using electricity as an energy
28 source.

1 Q You have mentioned something about price elasticity as one
2 of the concerns that Mike Katz's task force has been taking a
3 look at, in the Pacific Northwest Commission. Mike is also
4 the author of the report for Bonneville, is he not, on the
5 assessment of what the impact will be of the substantial in-
6 crease in Bonneville's rates recently?

7 A Right.

8 Q What was that, a 22% increase in Bonneville's rates?

9 A 27% on the average.

10 Q 27% is much higher than any rate increase that Bonneville has
11 implemented through the years that you were there?

12 A Right. There was only one other increase, and it was about --
13 an average of about 3%.

14 Q I take it that I read Mike's report correctly, that nobody
15 knows what the real impact is going to be?

16 A Right.

17 Q There is some suspicion that the raising of the rates will
18 dampen some of the demand?

19 A That's right.

20 Q That was one of the purposes, indeed, in the raising of the
21 rates?

22 A Well, Bonneville's raise of rates was purely a matter of cost,
23 because Bonneville has no authority to adjust rates other
24 than on a cost basis.

25 Q Other people have, for some years, been looking at the effect
26 of a number of factors on influencing electrical demand, and
27 there are studies that have been done that show that among
28 those factors, the price of electricity, followed by

1 population growth, followed by income, and followed by alter-
2 native energy prices, such as gas, in order of decreasing im-
3 portance, have an effect in influencing electrical demand?

4 Are you familiar with those studies?

5 A I have looked at some studies, but I wouldn't say that I'm
6 generally familiar with all of these studies.

7 Q Have you heard that point of view expressed?

8 A I think some of the studies that I have looked at would not
9 put it in the same order. Some of the studies I have looked
10 at would put the greatest emphasis on a society such as we
11 have today, on what you call cross-elasticity, the relation-
12 ship to other energy. For example, people are not going to
13 be cold in their homes. If they don't use gas or oil, they'll
14 use electricity, but they're going to keep their homes at
15 some reasonable level of temperature.

16 Q I was referring to a study which Jack McLeod, of Bonneville,
17 the environmental manager, with whom you put me in contact,
18 had referred me to in trying to keep me abreast of the com-
19 ments that Bonneville made on the Department of Natural Re-
20 sources' Environmental Impact Statement. I think that one of
21 the authors of that study was Chapman. You, of course, knew
22 Mr. McLeod?

23 A Sure.

24 Q Intimately, when you worked with Bonneville?

25 A Right.

26 Q Did you personally get into the question with your clients
27 when you began consulting with them as of January 1st of last
28 year on the alternatives of rail transportation of coal

1 versus the transmission?

2 A No, not at all.

3 Q Do you have any general knowledge with respect to the
4 current state of events on the willingness and availability
5 of rail transportation?

6 A No. I have not done anything for a number of years on
7 this, so what I would have to testify on would be something
8 in my experience that goes back about ten years.

9 Q It doesn't have to go back quite that far. One of the
10 things that Bonneville was kind enough to produce for me
11 through you was a series of reports made, some by Ed
12 Weitzel, and some by others.

13 A When I was referring to ten years, I was referring to my
14 discussions with the railroads.

15 Q I am showing you what have been marked for identification
16 as DNR Exhibits 23-A, 23-B, 23-C and 23-D. These are all
17 reports that have come from the Bonneville file, some to
18 you, some copies to you of studies made by the planners
19 and consulting engineers at Bonneville, comparing coal
20 shipment by rail?

21 A Right.

22 MR. SHENKER: I'll offer 23-A, B, C, and D.

23 Q Now, looking at Bonneville's own situation in terms
24 of power delivered versus the load that had been projected,
25 it is true, is it not, Bernie, that in the most recent monthly
26 summary that I have, furnished by Bonneville, which would
27 have been November of 1975, the load for November was 9.3%

1 below what had been forecasted?

2 A This is right. The big factor in the forecast is that the
3 aluminum industry is producing about -- at a rate of about
4 500 average megawatts below the forecast.

5 Q As we look back for the last year on the Bonneville forecast,
6 in October, it was 16.4% lower, in September, it was 24.8%
7 lower, in August, it was 22.0% lower --

8 A Those are peak loads that you're looking at.

9 Q Yes. Do you want me to give you energy figures, too?

10 A Well, I'd say that the peak is so susceptible to temperature,
11 we really don't pay much attention to it in the forecast.

12 Q Let's look at both peak and energy, then. For November, 1975,
13 it was respectively 9.3 and 6.2, October 1975, 16.4 and 6.5,
14 September 1975, 24.8 and 6.5, August 1975, 22.0 and 17.7,
15 June 1975 -- I don't have the July, for some reason -- 12.2
16 and 11.8.

17 A It was about the same ration in July, also.

18 Q In May of 1975, 14.3 and 9.6, in April of 1975, 10.1 and 9.7,
19 in March of 1975, 9.0 and 10.7, in February of 1975, 2.1 and
20 3.4, in January of 1975, 6.9 and 7.6, and in December of 1974,
21 11.4 and 9.7. Those comport with your recollections, I take
22 it?

23 A Yes. The aluminim industry started its cutback recently, in
24 the middle of 1974, and this is the principal factor that
25 you're referring to. That's a cutback of about 500,000 mega-
26 watts, which would be, in itself, during the winter months,
27 about 8% of the Bonneville anticipated load, that is, energy
28 load.

1 Q Those cutbacks in the actual delivery of the power over what--
2 or under what was forecasted by load, I think would show up
3 in the next West Group Forecast, if we were to compare?

4 A No. You'll show up the industrial load as a capacity load,
5 and this is the big factor here. Now, the next West Group
6 Forecast, the loads of a number of the generating utilities
7 are down somewhat. The forecast of the smaller systems that
8 serve an irrigated area, which is expanding very rapidly, is
9 up somewhat, but the main factor here will not show up, and
10 that's the industry level of production, because -- I shouldn't
11 say wouldn't show up -- at Bonneville, the typical thing is to
12 get forecasts from the industry as to when they anticipate
13 they'll be back to full production, and certainly, they don't
14 expect to be back to full production next year -- maybe the
15 following year -- I don't know, but some place in there, it
16 is anticipated they will be back up to full production and
17 this will go onto the forecast.

18 Q The hydro-thermal program does have hydro as well as thermal,
19 and we have been talking about the hydro?

20 A Right.

21 Q How much is entailed in the hydro program in phase 1?

22 A I think it's about 9,000 megawatts of hydro.

23 Q That comes in, of course, over a period of years? I think
24 the program began in 1971 and will go up to -- what?

25 A '82, '83. It's principally the third powerhouse at Grand
26 Coulee, the Libby project, and the Lower Snake projects.

27 Q The third powerhouse at Grand Coulee already has what -- three
28 of those units?

1 A One.

2 Q One.

3 A Two more will go on this year.

4 Q Those are 600-megawatt?

5 A About 700. The first one is about 600 -- between 600 and 700.

6 Q And there are going to be nine units altogether?

7 A There will be six that have been authorized that are under
8 construction. Three of them will be concluded this year and
9 then, three more at a later date.

10 Q The other three would be in the phase 2 program?

11 A No, they were all approved as part of the -- if I remember
12 correctly, as part of the phase 1 program. I'd have to get
13 my list here. I've got a list where I divided them between
14 phase 1 and phase 2. We looked at phase 1 for all of the
15 authorized projects, and we're looking at phase 2 -- at least,
16 another unit, possibly two units at Grand Coulee -- that are
17 not yet authorized.

18 Q In the December 1971 status report prepared by Bonneville, the
19 third power plant at Grand Coulee shows six of them under con-
20 struction and three for future potential.

21 A Right, and it's the future potential that we were looking at
22 for phase 2, and we don't know -- the studies aren't completed
23 yet -- whether we'll have three or two, or how many, because
24 of the question of fluctuation of the river.

25 Q In the 10-year hydro-thermal power program for the Pacific
26 Northwest, that's phase 1. It began when, in 1969?

27 A In 1969. It was approved in October 1969 by the administra-
28 tion.

1 Q The participants in that program, in addition to Bonneville,
2 were 105 publicly-owned systems and four major private utili-
3 ties?

4 A Right.

5 Q Who were the four private major utilities?

6 A Pacific Power and Light, Portland General Electric Company,
7 Washington Water Power Company, Puget Sound Power and Light
8 Company.

9 Q Coincidentally, the four applicants in this proceeding?

10 A Right.

11 Q Now, among the commitments that Bonneville made to the hydro-
12 thermal program was that Bonneville would provide peaking
13 high voltage transmission and forced outage reserves for the
14 private utility thermal plants?

15 A Yes.

16 Q And Bonneville also agreed to carry regional reserves for
17 unanticipated load growth?

18 A Right.

19 Q Is Bonneville on schedule for both of those commitments?

20 A No, Bonneville is behind schedule because of delays in
21 plants. Bonneville could not, at this juncture, provide the
22 load growth for the investor-owned utilities.

23 Q What were the plants at Bonneville that were delayed?

24 A The plants that were delayed at Bonneville were, one, there's
25 a delay in the hydro projects. Some of them that were sche-
26 duled somewhat earlier have been delayed for budgetary reasons
27 or for other reasons. For example, the three units at Grand
28 Coulee we're talking about, they should all have been in

1 operation by now, but only one is. These were technical prob-
2 lems in the construction. These were larger units that had
3 never been built before. The thermal plants, as I mentioned
4 earlier, the WPPS No. 2 plant was supposed to be in operation
5 in 1978, of which Bonneville gets 100% of the output, and it
6 now looks like it may be '79 or '80 before it gets into opera-
7 tion; consequently, we have the delays here in the plants.
8 You'll note in the present schedule that WPPS No. 2 is Octo-
9 ber 1979. It looks like even after this recent schedule, the
10 way things are going, it might be delayed even further.

11 Q Actually, the revised edition for WPPS No. 2 has it down for
12 September 1979. The old edition had it down for October '79?

13 A Since this was put together --

14 Q It slipped again?

15 A Well, it hasn't slipped yet, but I would say, from my view
16 of what's going on, that it's likely to slip again.

17 Q One of the conclusions that you drew from the proposed hydro-
18 thermal program was that the region would continue to have
19 the lowest cost power supply in the nation, is that right?

20 A Yes.

21 Q Part of the program also contemplated, did it not, that power
22 surplus to the needs of privately owned utilities, would be
23 banked by Bonneville for a later return to the private utili-
24 ties as they needed it?

25 A Right.

26 Q And in the interim, that power would be utilized to enhance
27 hydro-electric power operations, firm up interruptable sup-
28 plies to industry, and provide a portion of area-wide reserves

1 for outages and unanticipated load growths?

2 A Right.

3 Q In the appendix to the announcement of the 10-year hydro-
4 thermal power program for the Pacific Northwest, there were
5 several models that were proposed, were there not?

6 A Yes.

7 Q Can you tell me what those were?

8 A During this period, there was discussion as to what should
9 happen with the industry. Should they be permitted to ex-
10 pand as needed, or should they be held to the levels that
11 they then provided, so there are models there that include
12 the expansion of industry and there are models that include
13 no expansion of industry.

14 Q Model No. 2, for example, provides for the schedule for poten-
15 tial thermal plants and lists Centralia No. 1 and Centralia
16 No. 2 for opening in 1971 and 1972, and they were pretty much
17 on schedule?

18 A They were on schedule.

19 Q And the remainder of Model No. 2 was Nuclear 1 through 20?

20 A Yes.

21 Q Each at 1,000 megawatts?

22 A Yes.

23 Q From 1974 through 1990?

24 A Right.

25 Q And of course, Model No. 2 also includes the hydro development
26 which you have generally described for us. Do you have a copy
27 of the most recent West Group Forecast, Bernie?

28 A I don't have it with me, no.

1 (MR. SHENKER GIVES THE WITNESS A COPY OF THE DOCUMENT.)

2 Q If you would turn to the tab, "Resources and Requirements" --

3 A Okay.

4 Q The first page under that has January peak capability and the
5 next page after that is "Critical Period Energy Capability."

6 Under January capability for this current year, 1975-1976,
7 there is an indication of the total peak resources of 25,186
8 megawatts -- that's for the entire West Group --

9 A Right.

10 Q And 22,491 estimated total peak load. Do you think that those
11 figures are now off as a result of the experience that you've
12 had for this past year?

13 A The peak load will probably be somewhat lower. The peak re-
14 sources are not available to this extent. We had a problem
15 here in December when we had that coldsnap there in Portland,
16 where Bonneville couldn't meet the peak loads and they cur-
17 tailed industry, and they had to buy power from outside the
18 region. You've got a thousand here on Trojan which wasn't
19 available for the winter peak that's listed.

20 Q Now, if you would skip over with me, Bernie, to the year
21 1980-81, as I read the current West Group Forecast, the 1975-76
22 West Group Forecast that you have before you, in the year
23 1980-81, the total peak resources are listed at 35, 484 mega-
24 watts, and the estimated total peak load is 29,515 megawatts,
25 is that right?

26 A Yes.

27 Q In the 10-year hydro-thermal power program for the Pacific
28 Northwest, there's a load resource summary for the West Group,

1 which I assume was identical with the then existing report?

2 A No difference, right.

3 Q When we look at the year 1980-81 and compare it, in that year
4 it was 37,259, as compared to 35,484 for the total peak re-
5 sources, as compared to 35,484 -- right?

6 A Yes.

7 Q And the load, that's not too far off -- that's only a couple
8 of thousand megawatts off -- the load is 37,259 in the Bonne-
9 ville hydro-thermal program, to 29,515 to the West Group
10 Forecast?

11 A There's a difference, though, between the ways these two
12 were put together.

13 Q What's that difference?

14 A The reserves are included here as part of the requirements.
15 You'll note a reserve here of 4,036 losses. The losses are
16 about 5% of the load, and the rest are reserves. Now, this
17 does not have any reserves in it. Western Forecast does not
18 have any reserves in it.

19 Q So in order to be consistent, we would have to add 4,036 mega-
20 watts to the 29,515?

21 A Not quite, because I believe tht total peak load does have
22 the losses in it here, but it doesn't have the reserves, so
23 the reserves would have to be taken into account. In the
24 West Group Forecast, the reserves were not put in here. This
25 is the amount without reserves, and then you determine whether
26 you've got adequate reserves or not on this basis. Now, we
27 try to aim at about a 20% reserve, which, of course, we don't
28 have.

1 Q It's a nice thing?

2 A Right, but the two aren't quite comparable because of that
3 reason.

4 Q Now, as I recall, when you take a look at energy, you don't
5 have reserves on that?

6 A No reserves on energy, no.

7 Q If you look at the average energy, 1980-81, the total require-
8 ments in the Bonneville hydro-thermal program were 19,921.
9 The total load that is now indicated is 19,002, down about a
10 thousand megawatts?

11 A Right.

12 Q As to resources, in 1980-81, it was forecasted in the Bonne-
13 ville hydro-thermal program, at 20,058 megawatts, and it's
14 now at 17,440 megawatts?

15 A That's right. These energy figures are comparable.

16 Q The energy figures are down 3,000 megawatts now from what
17 was originally forecasted?

18 A That's right.

19 Q And that's, of course, a slippage in some of the plants?

20 A That's right.

21 Q Would you turn next in the West Group Forecast, Bernie, to the
22 tab -- still the same tab, "Resources and Requirements," but
23 it's the third page under that, something entitled "Surplus
24 Energy in Excess of Firm Load Carrying Capability"?

25 A Yes.

26 Q The document you have before you, the West Group Forecast, is
27 an exhibit in this proceeding, but that particular page is not
28 one that has been explained for the record. Can you tell me

1 what that means, that page?

2 A Yes. There are very substantial fluctuations in the Columbia
3 River, depending upon the amount of snowpack and the amount
4 of rainfall. This table takes 30 years of historical records
5 1928-1929 through 1957-1958, by months, by years, and indi-
6 cates the amount of surplus that would have existed in that
7 month and that year with the water conditions that existed
8 in that year. This is not necessarily, I point out, usable
9 surplus. It calculates, from actual water conditions, and
10 the actual loads that you're projecting for each one of these
11 years -- this is the '76-'76 operating year -- how much sur-
12 plus there would be if we had a duplication of that water
13 condition. For example, if we take July of 1928-1929, there
14 would have been a surplus of 4,570 average megawatts for that
15 month. In 1929-1930, there would have been no surplus in
16 July, and this is true for each month, based on the actual
17 water conditions that existed in the particular year of
18 record.

19 Q To make sure I understand, this says 1975-1976 operating
20 year?

21 A Right.

22 Q Does that mean that if we take the historical patterns of the
23 last 30 years, that in July of the operating year 1975-1976,
24 we should expect an average surplus energy of 1241 megawatts
25 for the West Group?

26 A Yes. Now, don't forget, this is only firm load. It does not
27 include the interruptable owed to industry.

28 Q I understand. Now, as we turn to the next page, that's

1 1966,67 --

2 A Exactly the same data.

3 Q That's what I wanted to know. I think I had just a couple of
4 more things I wanted to ask you about, Bernie. One is the
5 comparison of the original Exhibit 2-A with the Revised Ex-
6 hibit 2-A. Do you have both of those?

7 A Yes.

8 Q The Revised Exhibit 2-A is the one that would be in evidence.
9 The Original Exhibit 2-A had provided, generally speaking,
10 did it not, for earlier probable energy dates than now
11 appear on the exhibit?

12 A Yes.

13 Q And the variance by a year, or in some cases, three years?

14 A Right.

15 Q The only other thing I want to get back to now, Bernie, I
16 asked you about the question of the per capita consumption of
17 energy in other countries, as compared to the United States,
18 and maybe I didn't make my question clear --

19 A I would say this. I'm not capable of telling you the per
20 capita energy consumption. What I did reply to was the --
21 well, when you asked me about Sweden, was the per capita
22 electric energy use. I haven't gone into the oil use, the
23 coal use.

24 Q When you do go into the coal and other uses, then, for ex-
25 ample, the Federal Energy Administration has reported that in
26 Sweden, in West Germany, and in Denmark, they have a per capi-
27 ta GNP that is comparable to that of the United States, but
28 they use from about forty to fifty percent of the energy per

1 person that we do?

2 A Yes, and one of the big factors in this is that they don't
3 use the amount of gasoline. They don't use the personal
4 cars that we do in transportation in this country.

5 Q Where we put a lot of our petroleum supplies?

6 A That's right. That's where the bulk of our petroleum sup-
7 ply goes.

8 Q Okay. I have no further questions. You may have some fur-
9 ther answers that we're prepared to listen to, but our fellow
10 carpetbaggers from Portland -- by the way, I notice that we
11 have more Portlanders in the room now than Montanans, and
12 they want to get on the stand, so I won't ask you any more
13 questions. Thank you very much, Bernie.

14 HEARING EXAMINER: Do you have any further ques-
15 tions to ask Mr. Shenker, Mr. Goldhammer? (Laughter).
16 Do you have any objections to his proposed Exhibit DNR
17 23, Mr. Bellingham?

18 MR. BELLINGHAM: No, sir.

19 HEARING EXAMINER: Very well, at this point, then,
20 let me admit DNR No. 23, which is marked A, B, C, and D,
21 and also, Applicants' Exhibit 2-A. Any redirect examina-
22 tion?

23 MR. BELLINGHAM: Yes, I do.

24 (BRIEF RECESS)

25 HEARING EXAMINER: You may proceed, Mr. Bellingham.

26 Redirect, by Applicants

27 By Mr. Bellingham:

28 Q Mr. Goldhammer, let us first turn our attention to hydro-

1 electric power resources in the northwest area, as you have
2 been asked concerning this, as well as other witnesses in-
3 volved in the same subject. Are you familiar, generally,
4 with a study that has been referred to previously called
5 "Hydro-electric Power Resources of the United States, Develop-
6 ed and Undeveloped," as of the date of January 1, 1972?

7 A Is this the one prepared by the Federal Power Commission?

8 Q Yes, sir.

9 A Yes.

10 Q You are familiar with that?

11 A Right.

12 Q Now then, has there been a later study than that that brings
13 things up to date?

14 A Yes, at Bonneville's request, the Corps of Engineers compiled
15 all of the possible hydro projects in the Pacific Northwest
16 and there's a publication in January 1975 and revised -- there
17 were two changes made in it -- for February 1975, and it lists
18 all of the possible projects. It also includes all the al-
19 ternatives; for example, in Montana, Buffalo Rapids, there are
20 five alternative projects that have been considered. It lists
21 all five of them. The Middle Snake, I believe there were
22 four, and it lists all four.

23 Q Now, then, you're talking about a publication called "The
24 Inventory Potential Hydro Power in the Pacific Northwest" as
25 of January 1975?

26 A That's right.

27 Q Are you familiar with that particular study?

28 A Yes.

1 Q Now, then, have you calculated the total peak that could be
2 available if all the hydro-electric potential sites were de-
3 veloped as described in that particular document?

4 A Yes. I have roughly looked it over and I would eliminate No.
5 1, the additional units of existing projects, because they
6 are going ahead and they're all peaking projects, for example,
7 additional units at Grand Coulee and even the potential of
8 existing projects. Also, they have listed a few pump storage
9 projects, not the whole inventory, and those are peaking pro-
10 jects that I would say would be eliminated. You also have to
11 be careful in looking at this that you don't get -- there are
12 a lot of duplicate projects. For example, I mentioned, if
13 you build High Buffalo Rapids, you don't build the Buffalo
14 Rapids 2 and 4, or whatever it is, and if you build High
15 Mountain Sheep, you don't build Appaloosa, and taking and
16 eliminating those, roughly, there are about 10,000 megawatts
17 of peaking capacity, about, oh, somewhere about 3,000 average
18 megawatts in the projects here if we eliminate those others.

19 Q We're talking about 2500 to 3000?

20 A To 3000 average energy. The prime energy would probably be
21 on the level of about 2500. They used average energy in
22 there, which includes a lot of energy that would not be usable
23 with the present system. It just increases the surpluses.

24 Q Well, that brings up a subject now relative to definitions.
25 It's rather difficult to get over to a lay person not famili-
26 ar with the terms. Now, you've indicated a difference here
27 between firm energy and average energy, have you not?

28 A Right.

1 Q Would you explain what you mean by the difference in those
2 terms?

3 A In average energy, as used in this report, it's taking the
4 actual productions you would get based on historical records.
5 and I believe that they used 30 years of historical records
6 for that study. We're now using 40 years of historical
7 records, as we have more records available, and they took
8 what the average energy would be, so it would not only include
9 the firm energy, it would include this average that we were
10 talking about when we were looking at the West Group Fore-
11 cast a little while ago, and that would be the total energy
12 available. The firm energy is the energy that's available
13 under the most adverse conditions of previous history, and
14 that's the level in which utilities plan to meet their load.
15 They have to be able to meet their loads and so they have to
16 look at just the firm energy that's available.

17 Q In your analysis of this particular study, where would you say
18 that the best sites that are described there are located, as
19 far as specific rivers are concerned?

20 A Well, the best sites are -- there's one site left on the
21 Columbia River that's listed there, the Ben Franklin site.
22 It's the only site left on the main stem of the Columbia in
23 the United States that isn't developed. The Middle Snake
24 projects -- and the ones I mentioned in Montana, that substi-
25 tute here for Buffalo Rapids.

26 Q Let's take up the Middle Snake projects mentioned in there.
27 Is there any possibility at this time of developing those par-
28 ticular sites?

1 A No, there's recent legislation that prohibits it. There's no
2 possibility.

3 Q This is federal legislation?

4 A Right.

5 Q And what is the nature of that legislation?

6 A The nature of that legislation reserves that stretch of the
7 river for a wild river, in effect, and consequently, it rules
8 out the development of the Middle Snake.

9 Q What about the possibility of a site that you mentioned upon
10 the main stem of the Columbia?

11 A The Ben Franklin site, the Corps of Engineers has explored it.
12 The major opposition to it -- there are two factors, one,
13 it's the only remaining free-falling stretch of the river;
14 secondly, there are objections raised to it because it would
15 backwater up into the Hanford Reservation.

16 Q Well, the main problems, as you foresee them, in the Pacific
17 Northwest in the future, are directly related to the energy
18 problem rather than peak?

19 A Currently, yes, because we figure that the additional units
20 at existing dams can take care of the peaking requirements in
21 the region until about 1990, assuming that we can build and
22 operate the projects that now -- the additional units that now
23 look feasible, like we were talking about two or three addi-
24 tional units at Grand Coulee, additional units at Chief
25 Joseph, McNary, and so forth. Then, we go beyond 1990, and
26 we have to look at the peaking problem, and currently, it
27 looks like the most feasible way of getting additional peaking
28 would be pump storage and there are some pump storage projects

1 listed in the Corps of Engineers' Research Inventory.

2 Q Would it be safe to say, then, that this particular study you
3 referred to, and I'm now talking about the January 1975 in-
4 ventory, is indicative of much more peak than energy in those
5 possible sites?

6 A Yes, very definitely.

7 Q Can you mention some of the problems that could occur if
8 steps were taken to attempt to expand the existing hydro sites
9 or I should say plants, in the Pacific Northwest, by attempt-
10 ing to develop similar type dams and sites in the study as
11 they are described?

12 A You mean in the Corps' study?

13 Q Yes.

14 A Yes. I mentioned earlier, there are listed numerous storage
15 projects in that report, and I mentioned earlier that we pro-
16 ceeded on negotiating the treaty to get flood control -- a
17 treaty with Canada for flood control -- on the basis that we
18 could not get any of these sites for flood control, because
19 of the various problems that were involved in the sites,
20 flooding out large agricultural areas, or flooding the park
21 area, or going into wilderness areas. A second problem that
22 arises is the problem of other environmental problems, of
23 greater fluctuations in certain streams that causes problems.
24 For example, a reregulating dam could be built to bear Dworshak
25 and additional units put in to bear Dworshak. Hearings were
26 held and there was so much opposition in the area because of
27 the fluctuations that would occur in the river that the Corps
28 of Engineers discarded it. For example, one project was

1 authorized, at Sulton, and the Corps of Engineers had planned
2 to build it. That project ran into a lot of opposition on
3 the basis of the fluctuations it would have in the river on
4 the lower Snake and that project authorization was eliminated
5 in this bill with respect to that mentioned earlier, with re-
6 spect to the Middle Snake. Some of the local utilities have
7 looked at projects, for example, Coos-Curry Electric Co-op,
8 a project called Buzzards Roost, in southern Oregon. They
9 concluded from an environmental standpoint that they couldn't
10 proceed. Tomah PUD looked at the Trask River and found that
11 they couldn't proceed. As a matter of fact, on stems outside
12 of the major Columbia River, where the development has taken
13 place, it's a period into the 50's before utilities in the
14 areas could get licenses and build. As I recall, the inves-
15 tor-owned utilities, they haven't been able to proceed to get
16 any licenses and go ahead and construct since the projects
17 that they had approval of in the middle and late 1950's. The
18 public systems have built on the main stem of the Columbia
19 the Wells project, but aside from that, they haven't been
20 able to proceed with projects they looked at, some of which,
21 I've just mentioned.

22 Q When you mentioned environmental problems, isn't it true that
23 today it's very difficult to develop any hydro dram unless it
24 will function as a multi-purpose project?

25 A I would say that of the projects listed here, the only ones
26 that would have any potential at all would be built for some
27 other purpose, such as flood control. We still have local
28 flood problems. The Canadian Treaty takes care of the flood

1 situation on the main Columbia. We're no longer concerned
2 with the flood situation on the main Columbia, but we are
3 concerned with flooding situations. We've had heavy rains
4 this year. We've had floods on the coastal plains of both
5 Oregon and Washington this year, and certainly, one of the
6 things that Corps of Engineers is looking at is flood control
7 for those areas, and if the dams are built under present cir-
8 cumstances, I would think that they would have generators in-
9 stalled in them, even though they were built principally for
10 flood control purposes. Likewise, we have continual pressure
11 to increase the agricultural production and there are projects
12 that certainly have potential for irrigating additional lands,
13 and if they're built, I'm sure that they will have generators
14 installed in them.

15 Q You mentioned the term "investor-owned utilities," and I
16 think it has been used. You are referring to --

17 A Utilities that have common stocks on the market.

18 Q And the five applicants --

19 A Are investor-owned utilities.

20 Q Now, then, when was the last investor-owned utility hydro dam
21 built in the Pacific Northwest?

22 A The last ones that were built were in the late 1950's. For
23 example, Idaho Power Company built the Hell's Canyon stretch
24 of the river, Brownlee, and so forth. The Washington Water
25 Power built Noxon and Pacific Power and Light built Swift,
26 and Portland General Electric Company built Round Butte
27 on the Deschutes River. Those were all constructed in the
28 late 50's and my recollection is -- and I'm pretty sure this

1 is right -- there has been no construction by investor-owned
2 utilities since that date.

3 Q Do you have an opinion as to the future of investor-owned
4 companies building hydro facilities in the Pacific Northwest?

5 A There may be some possibility on pump storage, but on the
6 projects that are listed here, I'd say there's no possibility
7 at all. They have to be built for purposes other than power.
8 I would say that the Corps of Engineers would have no poten-
9 tial of building a power project as such under the present
10 circumstances.

11 Q As far as these particular sites that are mentioned in the
12 January 1975 Corps of Engineers' study, these sites do not
13 pretend to include studies made as to the economics of a par-
14 ticular site?

15 A As a matter of fact, most of the sites listed there have had
16 no studies made of the potential economic value of the site
17 in terms of either irrigation, flood control, navigation, or
18 power.

19 Q So that is an unknown question as far as these sites are con-
20 cerned?

21 A A good many of them. There have been studies made on some.
22 The Middle Snake has been studied for the last 25 years.

23 Q And of course, that's out the window?

24 A That's right, and Ben Franklin has had a number of studies
25 made of it, and some of the other sites that are not going
26 ahead for one reason or another.

27 Q What about engineering feasibility studies as far as these
28 particular sites are concerned?

1 A Again, most of the sites have not had studies made. I was at
2 Bonneville when this request was made from the Corps of
3 Engineers and the main purpose of the request was to get an
4 inventory of the Northwest so that the Corps of Engineers in
5 its study of Bonneville and the utilities might look at some
6 of the possibilities here, particularly on the multi-purpose
7 projects.

8 Q Is it true that if the sites that are mentioned in the par-
9 ticular study that we're referring to, the January 1975 study,
10 were possibly good sites to develop hydro that plans would
11 have been made by now to build these plants?

12 MR. SHENKER: I can't think of any possible basis
13 on which to object to the qualifications of this wit-
14 ness to say almost anything in the world, but for him to
15 be Nostradamus is even beyond his capacity and I think
16 that's really asking too much speculation from the wit-
17 ness.

18 MR. BELLINGHAM: Does the Hearing Examiner under-
19 stand the objection? I'm not sure I do.

20 HEARING EXAMINER: I think he objected on the grounds
21 of speculation.

22 MR. SHENKER: I think that's a fair statement.

23 HEARING EXAMINER: Would you rephrase the question?

24 Q These sites now contain no hydro development on them?

25 A The ones I mentioned, no. There are some in there that do
26 have additional units to install and I've excluded them
27 earlier.

28 Q The other sites do not?

1 A No, they have no hydro development on them, no dams on them.

2 Q If these were very excellent sites, is it your opinion that
3 they would have been developed by now?

4 A Well, I would say this -- if they were excellent sites --

5 MR. SHENKER: No, very --

6 A Very excellent sites, and there was any possibility of build-
7 ing them, certainly they would have been built. The utili-
8 ties in the area, public and private, and the Corps of
9 Engineers have looked at any sites that looked potentially
10 available and have gone ahead and pursued construction of
11 them, but in this particular instance, these sites here,
12 there has not been any.

13 Q There has been reference in the testimony to date about a
14 FEA -- a Federal Energy Administration study made, and which
15 came out in the fall of 1975, relative to the reasons for
16 electric utility power plant delays. Are you familiar with
17 that particular study?

18 A Yes.

19 Q In order to shortcut here the necessity of testimony, I might
20 state that there have been three reasons given in some of the
21 evidence previous to your going on the stand, these three
22 reasons being financial, a decrease in loads, and the third,
23 as I recall, was based upon the fact that there have been
24 problems of obtaining permits and the necessary approval from
25 the various regulatory organizations, both federal and state?

26 A Yes.

27 Q Are you familiar with the particular plan itself?

28 A In general, yes.

1 Q Are there additional factors involved insofar as the reasons
2 for delays, as revealed by this particular study?

3 A You have to divide delays into two parts, which I believe
4 they have done in the study. One is the starting on a plant
5 with your planning and then not going ahead and building it
6 and deferring the construction of it to some future date, and
7 I think the three reasons that you have outlined are the
8 basic reasons for the delays, because you couldn't finance
9 it, loads don't indicate that it's needed, and I would add
10 one other thing that they didn't have, which the Federal
11 Power Commission has been very concerned about, and that is
12 that some of them are taking a calculated risk of having less
13 than normal reserves in deferring plants and that, I don't
14 believe, was mentioned in the FEA report. There are other
15 reasons that are significant and we've been faced with them
16 in the Northwest, for delays. For example, in southern Idaho
17 the constructor of the Jim Bridger plant has had difficulty
18 in getting a full labor component for the plants there. Skill-
19 ed labor has had many opportunities and you have difficulty
20 in securing it. When we talk about the long construction
21 schedules we have on these plants, it's almost impossible to
22 go along with such a long schedule without some labor trouble,
23 strikes, at the plant, or suppliers of a plant. Trojan has
24 had this problem just recently. There were some delays due
25 to some walkouts that had to be settled.

26 Third, we don't have enough skilled people for all of
27 the construction taking place. For example, in the Trojan
28 plant, I can recall when Frank Warren, the President of the

1 plant, was telling us of the difficulty he was having in
2 getting sufficient stainless steel welders, and combing the
3 country for stainless steel welders, which causes delay.
4 Then you have other problems which arise when you construct
5 such things as -- for example, the San Onofre original units
6 started operating, operated fine, ran into some problems on
7 electrical wiring, had to be down for six months before it
8 started operating again. These things occur that delay the
9 inclusion of the plant into your resources.

10 Q There are other factors affecting delay, also, that are men-
11 tioned in this particular study, are there not? What about
12 the procurement of materials and equipment?

13 A Yes, that's what I was mentioning with strikes, that you have
14 difficulty getting the materials because of strikes of sup-
15 pliers or labor problems on suppliers, or you recall in the
16 early days of building the nuclear plants, the suppliers of
17 some of the equipment just couldn't meet the orders, and there
18 were delays as a result of this. I think the major factor,
19 however, are the labor troubles that occur in such a long con-
20 struction period, that occur from the suppliers as well as
21 from the plant itself.

22 Q Now, this particular study, and I'm referring, of course, to
23 the FEA study, did not, in itself, pinpoint or point out any
24 particular generating unit, did it?

25 A No.

26 Q In other words, it was an overall, inclusive type of study
27 covering plants all over the United States?

28 A Right.

1 Q It is not confined to any particular area?

2 A No.

3 Q Let us turn to a new subject now. What does EPRI mean?

4 A Electric Power Research Institute.

5 Q And what is this particular institute?

6 A The Electric Power Research Institute was formed by the
7 utilities, public and private, in the United States, to carry
8 on research in the electrical field. It's an organization
9 that's been established -- its headquarters are at Palo Alto,
10 California. It's been operating just a few years now.

11 Q And what type of activity, generally, does it carry on?

12 A It's carrying on research. I might say that it got started
13 originally because of legislation that was proposed, where
14 there would be a tax on electric power sales and that money
15 would be used for research by the federal government, and the
16 utilities said, "Let's do this on a voluntary basis," and
17 they set it up to do this on a voluntary basis, so they're
18 doing research on transmission, on generation, anything,
19 really, relating to the electric power field.

20 Q Does this include research into possible alternatives to the
21 present type of generating units being used?

22 A Yes, rather extensive research. For example, one of the per-
23 sons at Bonneville is one of the contact men. He's been
24 looking, and is very interested, in a peaking device which is
25 using energy that's been stored similar to what we call a
26 windup toy and then releasing it, so they're looking at all of
27 these things, solar, whatever energy you look at, would be in
28 their program.

1 Q I might mention that the device you mention is about the
2 only one that I can think of that hasn't been mentioned so
3 far in these hearings.

4 A Is that right?

5 MR. BELLINGHAM: I was trying to call it to your
6 attention, Mr. Shenker. It's a windup top type of
7 thing to release energy.

8 Q Do the applicants all belong?

9 A Yes. The investor-owned utilities all arranged their contri-
10 butions through the Edison Electric Institute and the five
11 applicants in the Colstrip hearings make their contributions
12 to EPRI.

13 Q In other words, everybody who belongs to this institute con-
14 tributes a certain amount of money per year?

15 A Yes. I don't remember exactly what the contribution is this
16 year, but I believe it's .15 or .12 mils per kilowatt hour
17 on the sales. It's a substantial contribution.

18 Q And the function of the institute is to do applicable research
19 so that individual utilities who do not have the capacity or
20 the money to do this, will be freed from this obligation, is
21 that correct?

22 A Yes. It would be impossible for utilities individually to
23 carry on the costs of research as they exist today, and so
24 they're pooling all their resources into one pool in order to
25 carry on their research.

26 Q Are you familiar, generally, with the California utilities
27 companies' exchanges of power with the Pacific Northwest com-
28 panies?

1 A Yes.

2 Q There has been evidence in this case so far relative to the
3 outstanding contracts that some of the California companies
4 have with the Pacific Northwest companies for the exchange of
5 power?

6 A Yes.

7 Q Do you have an opinion, as a result of these contracts,
8 whether or not the firm load carrying capability of the north-
9 west companies has been impaired?

10 A No, as a matter of fact, it's been enhanced, particularly as
11 a result of the arrangements that Bonneville has, where for
12 every kilowatt of capacity supplied the California utilities,
13 they have to pay an additional 2500 megawatts -- excuse me,
14 2500 kilowatt hours. This has resulted in about -- taking
15 the average load factor of the utilities in the area -- it
16 would result in about 500 average megawatts of additional load
17 carrying capability for the Northwest.

18 Q So it has been an exchange that you feel has been beneficial?

19 A Yes, not only this, but when we've had difficulties, for ex-
20 ample, we've been able to secure power. We talked earlier
21 about the '73 situation -- '73-'74, Bonneville was able to
22 acquire 400 megawatts from Southern California Edison which
23 they made available to Pacific Power and Light and Portland
24 General Electric, which helped out considerably during that
25 period.

26 Q Under the terms of these contracts -- and I should ask you,
27 are you generally familiar with the particular contracts in-
28 volved?

1 A Of course, I'm very familiar with the Bonneville contracts,
2 since I negotiated them. I'm also familiar, in general, with
3 the other contracts. For example, they required either Bonne-
4 ville, wheeling, or some other factor, in which I've had an
5 opportunity to review them.

6 Q As a general rule, do these contracts provide for Pacific
7 Northwest power going south to be in excess of that needed
8 by the companies involved?

9 A No, it's only surplus power that -- when we're talking about
10 energy, it's only surplus energy that goes south. I should
11 make one exception to that, and that's the Columbia storage
12 power exchange, Canada's power. There is some that goes south
13 on a firm basis that's Canada's power, and the Centralia power,
14 427 megawatts, is owned by the Central Valley project.

15 Q I think you have referred occasionally during your cross-
16 examination to possible curtailment?

17 A Right.

18 Q Has there been anything new upon this subject insofar as our
19 federal government is concerned, relative to the possible cur-
20 tailment of use of power in the future?

21 A We've had discussions, for example, of what might be done to
22 conserve power or what you do in the place of curtailment.
23 I might say that during the oil boycott, there were questions
24 raised about whether, if we got into too serious a situation
25 in California, should the Northwest be curtailed in order to
26 supply power to California, but as to any program, specific
27 program on curtailment, the answer is no.

28 Q Has there been any letter recently sent out from the

1 Department of the Interior relative to this particular sub-
2 ject?

3 A Yes. Bonneville has just recently sent out a letter on the
4 basis of working out a curtailment program of the Bonneville
5 customers and the fact that Bonneville sees deficiencies com-
6 ing in the late 70's and early 80's, and instead of waiting
7 until we're on top of the deficiency, such as happened in
8 '73, the suggestion here in this letter is that we get to-
9 gether and try and work out some program which is on a reason-
10 able basis, now.

11 Q Isn't it safe to say that in early January, this letter was
12 sent out?

13 A That's right.

14 Q And what is the reason for this?

15 A The reason is the projection of deficiencies in the area and
16 the inability to meet the load plus the fact that as far as
17 Bonneville is concerned, we may not have -- I shouldn't say
18 "we" again -- but Bonneville may not have the right to curtail
19 the industry loads, and therefore, the customer should be
20 working on alternate plans of cutting back. It looks, as far
21 as the analysis we've made, in the late '70's, early '80's,
22 even with good water conditions, we're not going to be able
23 to meet the load.

24 Q In effect, you have requested your customers to prepare for
25 these possibilities?

26 A Bonneville has, right.

27 Q Bonneville has requested its customers to prepare plans rela-
28 tive to possible curtailment?

1 A Right.

2 Q I think you've indicated here previously and have touched
3 upon it, but I want to make sure that it's adequately covered
4 if it already hasn't been, and I think it's your opinion as
5 revealed by your written statement, that the load forecasts
6 of the applicants and other utility companies of the Pacific
7 Northwest are too low?

8 A That's my opinion, and my opinion is based on the fact that
9 I think we have not taken into account sufficiently this
10 cross-elasticity we're talking about, the high costs of oil,
11 and the reason I base this is the discussions that I had be-
12 fore I left Bonneville, with a large number of industrial
13 users who wanted to increase their electric power use sub-
14 stantially as a substitute for oil or natural gas, and some
15 of them have gone ahead and done this.

16 Q We have discussed previously the possible future shortages
17 of peak and energy, with emphasis, as I recall, on the poss-
18 ibility that there'll be more of a shortage of energy than
19 peak, but are there still problems that you foresee as far as
20 peak in the future is concerned, based upon the historical
21 problems that have arisen within the past few years?

22 A Yes. I mentioned earlier in the testimony that Bonneville
23 had to curtail during the peak loads in December of this
24 year, even though it appeared we had surplus. The same thing
25 happened in 1972 when we had cold weather. Bonneville, for
26 about nine days, was curtailing industrial loads in the morn-
27 ing and in the evening because of inadequate peaking. Now,
28 one of the problems we face on this, which presents a

1 difficult problem, is that cold weather comes to the north-
2 west usually without a great deal of warning and when the
3 cold snap hits, the loads go up immediately. Reservoirs have
4 to be drafted, the pondage below the plants, so that on the
5 second and third days, for example, the reservoirs are lower
6 behind the generating plants than they were the previous day.
7 At Grand Coulee, for example, every foot that the reservoir
8 is reduced, there's a loss of ten megawatts of peaking
9 capacity, and that can be drained down several feet in a
10 period of a two or three day cold spell because of the time
11 it takes for the water to get out of Mica and these other
12 reservoirs to come down to Grand Coulee to replace it, so fre-
13 quently, we have much less peaking available than the statis-
14 tics would indicate and this is one of the reasons that we
15 frequently, even with good water conditions, will curtail for
16 short periods, the industrial load.

17 Q And there have been periods, particularly December of this
18 last year?

19 A That's right, and December of 1972.

20 Q We've talked about reserves, and I'm sure it's in evidence,
21 but would you explain briefly, if you can, what you mean when
22 you use the word, reserve?

23 A There are different types of reserves, and we try to combine
24 them all. No. 1, we know that a generating unit is not going
25 to operate 100% of the time. It has to be down for mainten-
26 ance, it has to be down because of forced outages, it's down
27 for other reasons that occur. For example, we've had times
28 at Bonneville Dam where we couldn't get the output out of it

1 because the screens that keep the trash from getting into the
2 turbines froze up so you couldn't get the quantity of water,
3 so we have reserves to take care of that situation.

4 Secondly, we have reserves to take into account the fact
5 that the loads may exceed the estimates. We try to insist
6 that the loads be based on mathematical expectation, so
7 there's an equal opportunity for the load to be above it or
8 below it, and so you have to have some reserves -- on a
9 regional basis, we do it, so that it will be much less than
10 on a separate basis.

11 A third need of reserves is the fact that I mentioned
12 earlier, which I don't think we take adequate account of.
13 The reservoirs may not be full, the pondage behind the plants
14 may not be full, so we may not get the full output out of the
15 plant.

16 Q Do you know of any company in the Pacific Northwest that
17 you're familiar with which hasn't, at one time or another,
18 dipped into its reserves?

19 A We've operated at a time when we were practically up to the
20 limit, and as I mentioned, we've taken all the power in the
21 Northwest and still had to go outside the region in order to
22 carry the load. I might also mention here that just a few
23 years ago, I made a little study of Grand Coulee Dam, which
24 has 18 units, and I found that over a 10-year period that I
25 have looked at, only once in that ten years, were all 18
26 units operating during the peak period.

27 Q I think you have touched upon conservation, and I don't mean
28 to go into it to any great extent any further, but you have

1 indicated that conservation is a one-shot deal to a certain
2 extent, did you not?

3 A No, not quite. I have mentioned that conservation has to be
4 a continual thing in order to get saving and what I mentioned
5 was that you probably get about a year's load growth saving
6 based on what happened in Sweden, what happened here in the
7 Northwest when we had a conservation program. I would think
8 that we could reduce the loads by a one-year load growth by a
9 strong, continuous conservation program, but if it isn't con-
10 tinuous, the experience of Sweden was, and the experience we
11 had here, was that people tend to go back to their old habits
12 unless you continually pound on it, but it's about one year's
13 load growth. You can't save that one year every year. It's
14 one year over a long period.

15 Q When you say long period, how many years are you talking
16 about?

17 A Oh, maybe looking at a 10-year period, you're saving about
18 5% of the total load, and the current forecasts of the North-
19 west on energy are about 5% increase a year.

20 Q You've been involved, and you've testified to, a lot of
21 regional planning, haven't you?

22 A Yes.

23 Q Do you have anything to say relative to the diversity of the
24 kinds of generating plants to be coming on line in the future?

25 A Yes. As part of the hydro-thermal program, when we started
26 getting into it, we started having problems in the country at
27 various types of plants. There was a problem at Oyster Creek,
28 there was a problem that some of the other utilities got into

1 on nuclear plants, so we tried to encourage the utilities in
2 the area for two things, one a diversity of types of plants
3 and a diversity, also, in the region, for transmission rea-
4 sons; in other words, we try to encourage that there be some
5 coal plants, some boiling water nuclear plants and pressure
6 water nuclear plants. As a matter of fact, we were quite in-
7 terested in trying to get a gas-cooled nuclear plant, which
8 the City of Eugene had been interested in, but they did not
9 proceed with the plant, in order to get the diversity, the
10 same reason, incidentally, that in the early days, the air-
11 lines had a number of different types of aircraft. You
12 wouldn't need as much reserves.

13 Q If 3 and 4 are not built, and I'm talking of the Colstrip
14 units --

15 A Yes.

16 Q Do you see any alternatives for that loss of power?

17 A The alternative is for further cutback in loads. We're doing
18 everything we can in the region now because of the estimated
19 deficiencies to try and secure additional resources during
20 this period, or, as I mentioned, to cut loads we might be
21 able to cut, and I don't see any other alternative than fur-
22 ther curtailment of load. I don't know what the possibilities
23 are of additional combustion turbines. They certainly are
24 not in the public interest, to put in additional combustion
25 turbines at this time.

26 Q I'd like to call your attention to page 5, line 19, of your
27 written statement, and there you state that seven of the
28 participants -- and we're talking here of participants in the

1 Hanford nuclear plant, serve loads in the State of Montana,
2 and those seven acquired 20.679% of the Hanford power. Do
3 you know the names of those seven participants?

4 A Yes. Pacific Power and Light, Montana Power Company, Missou-
5 la Electric Co-op, Flathead Electric Co-op, Lincoln Electric
6 Co-op, Northern Lights, and Ravalli Electric Co-op.

7 Q I'd like to call your attention to the nuclear plants that
8 have been designated WPPSS, and those initials stand for
9 what?

10 A Washington Public Power Supply System.

11 Q They are nuclear plants 4 and 5. Are there any Montana par-
12 ticipants that will get some of the energy from those plants?

13 A Yes. Participating in those plants are the Missoula Electric
14 Co-op, Flathead Electric Co-op, Lincoln Electric Co-op,
15 Northern Lights, Ravalli Electric Co-op, and these are all
16 participants in Hanford, and two additional that Bonneville
17 has served since Hanford, Vigilante Electric Co-op and
18 Glacier Electric Co-op.

19 Q I think you've indicated that you expect loads of the Pacific
20 Northwest companies in the future to resume their normal load
21 growth, have you not?

22 A Pretty much, yes, as a matter of fact, maybe somewhat above
23 the normal load growth, because of the high cost of oil and
24 natural gas.

25 Q Are there any other reasons?

26 A Those would be the principal reasons, the high cost of other
27 fuels, and I expect that the recession that we're now having
28 will, hopefully, recede, and we'll be back to a full

1 employment, or nearly full employment, economy.

2 Q I think you made a general statement relative to the
3 methodology of using historical trends of loads as far as
4 utilities in their forecasts?

5 A Yes.

6 Q And I think you said this is a method that you think probably
7 will be discarded, or words to that effect?

8 MR. SHENKER: Has been discarded.

9 A Yes, has been discarded. We discarded this at Bonneville --
10 I'm not talking about ignoring the trends, you certainly look
11 at them, but at Bonneville, for a number of years, we've been
12 looking at the logic of the forecasts by looking at residen-
13 tial consumers, for an example -- where they've used the
14 power that would be increased. You look first at the popula-
15 tion as an indicator, how many customers you expect to serve,
16 and you look at the various classes of customers. How much
17 electric heat do you anticipate that you're going to have in
18 the future, and what are the uses going to be, what type of
19 heat you're going to have. You look at the commercial users,
20 what's their trend in use and the type of use, and the type of
21 industry that you're going to have, and the breakdown on the
22 various types of industry, and these are things, I think,
23 that have to be explored. I think most utilities are doing
24 this now. We've had in the nation about a 7% average increase
25 in loads on a rather steady basis, and certainly, we don't
26 think that that's justified, to look at that past trend, with-
27 out looking at the factors that would make up the increases
28 in the use of electric energy.

1 Q So that your feeling is that there should be other factors,
2 also, weighed?

3 A Oh, yes.

4 Q And you have mentioned some of them, the population growth,
5 and so forth?

6 A Right.

7 Q This is a matter of judgment, to a great extent, is it not?

8 A Yes.

9 Q And you certainly don't mean that you should discard entirely
10 the historical trend?

11 A No. I think these are something that you look at, but by
12 themselves, they're not going to give you an adequate load
13 forecast.

14 Q It forms a basis upon which the load forecast is built and
15 has been built in the past?

16 A Yes.

17 MR. BELLINGHAM: I'm going into a new subject. I
18 don't have many more questions, but I presume there will
19 be some re-cross, so I don't imagine we're going to get
20 through here.

21 HEARING EXAMINER: Is this presumption accurate,
22 Mr. Shenker? You are going to need some time for re-
23 cross?

24 MR. SHENKER: I'm shocked that it's presumptuousness,
25 but the presumption is correct.

26 HEARING EXAMINER: Is it convenient with the wit-
27 ness, then, to come back after lunch?

28 WITNESS: Sure.

1 HEARING EXAMINER: Well, let's recess until 1:30.

2 (HEARING RECESSED AT 12:05 P.M.)

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1 Following the luncheon recess, the hearing reconvened at
2 1:30 P.M. on January 23, 1976.

3 HEARINGS EXAMINER: You may proceed with your
4 redirect, Mr. Bellingham.

5
6 CONTINUATION OF EXAMINATION OF BERNARD GOLDHAMMER

7 Redirect, by Applicants

8 By Mr. Bellingham (continuing):

9 Q I have just a few questions left regarding the West Group
10 Forecast, Applicants' Exhibit number 118, that you testified
11 to this morning; do you recall that?

12 A Yes.

13 Q Now, then, Mr. Shenker asked you some questions relative to
14 the graph -- the table, I should more appropriately call it --
15 immediately following the Resources and Requirements index,
16 Section 3. Now, the first page following that was a summary
17 of resources and requirements relative to peak capability; the
18 second table following that was a summary of resources and
19 requirements relative to critical period energy capabilities;
20 do you recall that?

21 A Yes.

22 Q Now, I think you indicated at that time that these two tables
23 did not contain in them anything regarding reserves; was that
24 your statement?

25 A That's right, that they did not include reserves.

26 Q Do you know of anyplace in this West Group Forecast where you
27 have a table which includes reserves?

28 A Yes, there's a summary table --

1 Q Do you have the West Group --

2 A No, I don't have it in front of me --

3 Q I'll get one for you.

4 A But there is a summary table at the beginning which has the

5 reserves in them.

6 Q I'd like to call your attention to the table immediately

7 following the colored graphs that appear in the front.

8 A Yes.

9 Q It's headed Sheet 1 of 2, West Group Forecast Estimated Loads

10 and Resources, July '75 through June '86; is that correct?

11 A That's right.

12 Q And does that particular forecast include peak as well as

13 energy?

14 A Yes. On line 3, it shows the reserve requirements on peak; on

15 line 8, it shows the reserve requirements for energy.

16 Q Now, then, what is the difference between this particular

17 sheet and the sheets we previously referred to in the resources

18 and requirements, section 3?

19 A The reserves.

20 Q Now, then, would you call this particular table that we're

21 referring to now in the front of the Forecast, immediately

22 following the colored graphs, as being more appropriate

23 and applicable insofar as planning a system is concerned?

24 A Oh, yes; you have to plan and include your reserves in planning,

25 and you have to build and you have to make arrangements for

26 reserve in some way by building additional units or having

27 loads that you can curtail in order to buy the reserves.

28 Q Then you would say that this graph, or this table, is more

1 appropriate?

2 A This would be what you would use for planning programs, yes.

3 Q Now, then, I think you mentioned this morning that reserve
4 requirements were not applicable, generally speaking, to
5 energy; do you recall that?

6 A The same type of reserves are not applicable. On the hydro
7 system, the forced outage reserves, there's enough units that
8 you can get out all of the energy, let's say, out of most of
9 the dams -- it isn't true for Grand Coulee until we got the
10 third units in there. Now we can get all the energy out, even
11 if the unit is down for a period. The load growth reserves,
12 however, are applicable to both the peaking and the energy;
13 and the reserves shown on the energy on column 8 are the load
14 growth reserves.

15 Q Now, then, I call your attention to 1980 and '81 because that
16 was the years that your testimony previously recalled; and under
17 total peak resources, 1980 and '81, on the table shown at the
18 back of the book, section 3, following resources and require-
19 ments, you have what figures?

20 A For 1980-81 on peak, it shows a surplus over total load of
21 5,969 megawatts.

22 Q And now, calling your attention to the forecast in the front
23 of the book, estimated loads and resources --

24 A That's 951.

25 Q Pardon me?

26 A It shows 951.

27 Q And, can you explain?

28 A Yes. They show, on column 3, there's a reserve requirement of

1 5018; if you add that to the 951, you get 5969; and if you
2 look at the bottom of the page on 1980-81, you'll find the
3 5969.

4 Q So it makes a difference what table you look at, doesn't it?

5 A Yes.

6 Q Now, calling your attention to the table in the back of the
7 book, section 3, resources; and in 1980 and '81, what is the
8 surplus of efficiency?

9 A For 1980-81, it's shown as 524 surplus.

10 Q The figure you gave was what?

11 A Oh, wait a minute, I gave you the wrong one. It's 1562, is
12 the deficiency.

13 Q Now, calling your attention to the table in the front, the
14 estimated loads and resources for the same year?

15 A It shows a deficiency of 1934; the difference being column 8
16 reserve requirements of 372. If you add the 372 to 1562, you'd
17 have a deficit of 1964.

18 Q Now, then, I'd like to call your attention to the resources and
19 requirements tables which immediately follow the two summaries
20 of resources and requirements, in which you were interrogated
21 concerning, headed Surplus Energy in Excess of Firm Load
22 Carrying Capabilities for Thirty Years of Water Record; do you
23 recall those particular tables appearing there for the various
24 years?

25 A Yes, I do.

26 Q And, would you consider these particular tables as involving
27 hindsight as distinguished from foresite?

28 A Yes, they have to be on hindsight.

1 Q What do you mean by that?

2 A It means that after we've gone through the year, we know that
3 we had these surpluses on a particular year; like in -- let's
4 take any year here -- 38-39 as an example -- where in January
5 it would show a surplus. You may not have the surplus avail-
6 able for sale in January, because it isn't until later that you
7 know that you've got enough water in February, March and April
8 to fill your reservoirs and still have that surplus. So it's
9 the whole year that counts; it's a representation of a year;
10 it isn't an operating program.

11 Q You couldn't plan a system on the basis of these tables, could
12 you?

13 A No.

14 MR. BELLINGHAM: No further questions.

15 HEARINGS EXAMINER: Mr. Shenker, re-cross.

16 MR. BELLINGHAM: One further thing, I'm sorry.

17 Q I'll hand you what has been marked as Applicants' Exhibit 213
18 and ask you if this is the letter of January 9, 1976, which
19 Bonneville Power Administration sent out to its customers
20 regarding the possible curtailments?

21 MR. SHENKER: Stipulate that it is and I have no
22 objections.

23 HEARINGS EXAMINER: Exhibit 215 is admitted.

24
25 Re-cross, by Department of Natural Resources and Conservation

26 By Mr. Shenker:

27 Q The Corps of Engineers' study of January, 1975, is something
28 that Bonneville specifically requested; isn't it?

1 A That's right.

2 Q And their study is limited to the Bonneville service district?

3 A That's correct.

4 Q The Federal Power Commission has not published a subsequent
5 study after the 1972 one?

6 A No, not to my knowledge.

7 Q And the figures that you used were 10,000 megawatts peaking
8 and 3,000 megawatts energy as developable as hydro?

9 A Roughly, they were rough figures; I just went over it roughly.

10 Q You were talking with Mr. Bellingham about the comparisons of
11 energy and peak problems such as they may be in the growth
12 of the systems; in your statement you had the figure for a
13 growth in the Pacific Northwest between 1974 and 1973; do you
14 know what the growth rate was between 1973 and 1972?

15 A No.

16 Q You said, I think, Mr. Goldhammer, that there have been no
17 recent investor utility dam sites that have been constructed;
18 you don't mean to preclude those existing dam sites that have
19 been expanded by investor-owned utilities?

20 A No, I've tried to make a distinction, both in the Federal
21 and the other, and that's why I excluded from this the
22 expansion in the existing projects. It's an entirely different
23 problem expanding a project by putting in additional units
24 than putting in a new one.

25 Q A number of the investor-owned utilities have, in fact, expan-
26 ded existing projects?

27 A That's right. In fact, there are some in here that could be
28 expanded further.

1 Q Then, Mr. Bellingham asked you that very interesting question
2 that, I think, was worded; "If these were very excellent sites,
3 they would have been developed already, wouldn't they?" And
4 your answer, in effect, was: "Sure, if there weren't some
5 problems." Right?

6 A Right.

7 Q Now, the kinds of problems that would stop the development of
8 hydro facilities are, I suppose, in generic terms, economic
9 or environmental?

10 A Basically, right.

11 Q And the environmental problems that would stop hydroelectric
12 development would not be air pollution problems, would they?

13 A No.

14 Q Nor would they be water quality pollution problems?

15 A There may be a problem of water quality because of water
16 temperatures with regard to fish runs.

17 Q But aside from the temperature change --

18 A There would not be; it would be the temperature change that
19 would be a problem.

20 Q You also discussed with Mr. Bellingham the sales of energy
21 to California from the Pacific Northwest, which, with a couple
22 of exceptions, are for surplus power?

23 A That's right.

24 Q One exception is the Centralia project, which has an agreement
25 with, in effect, an owner in the Central Valley, California
26 area to supply them with megawattage?

27 A They're not the owners, but they're taking the owner's position
28 for 10 years.

1 Q Right. The other exception is the Canadian agreements which
2 send power down to California?

3 A Yes, for a limited period.

4 Q What is the duration of that period?

5 A Well, the power that's going to California now has been sold
6 to the State of California by Puget Sound Power and Light,
7 Seattle and Tacoma; and 150 megawatts is available through
8 April 1977, and another 150 megawatts is available until 1982.
9 Now those are peak figures. The energy is about, somewhere
10 between a 30 and 40 percent load factor.

11 Q You mean 30 or 40 percent of the peak?

12 A That's right.

13 Q Alright. When you describe the surplus power that is sold to
14 California, is that what is sometimes called the "dump power"?

15 A No, there is a difference here. Dump power is power that's
16 available above the rule curves in the Northwest. We have
17 times, for example, when there's power available for steam
18 displacement in the Northwest, but it could not be sold outside
19 of the region because the hydro sold outside of the region by
20 Bonneville has to be power that would otherwise fill, that
21 could not be conserved. Now, some of the dump power could be
22 conserved for further use; but you know that you don't need it
23 for firm power loads, so it can be sold.

24 Q Some of the power, then, sold to California would be dump
25 power, some of it would be surplus power that is not --

26 A No, the only power that Bonneville sells to California is
27 surplus power.

28 Q Other utilities in the Pacific Northwest, however, do sell dump

1 power to California?

2 A Could sell some dump power; right.

3 Q And that's at rather low rates; is it not?

4 A Well, it all depends. Of course, it depends on what you mean
5 by low rates.

6 Q Lower than what they could otherwise sell it for.

7 A If Bonneville has surplus available, the Bonneville rate is
8 the prevailing rate; everybody has to sell at the Bonneville
9 rate or they couldn't make a sale. When Bonneville does not
10 have surplus available, the rates vary considerably, depending
11 upon the circumstances at the time and where the power is
12 coming from. If there's a lot of power available, the rates
13 push down.

14 Q Now, you had described for Mr. Bellingham the curtailment in
15 which Bonneville was involved last month, in December of 1975?

16 A Yes.

17 Q Did Bonneville breach any of its contracts that month?

18 A No, it wasn't a -- Bonneville had the right to curtail indus-
19 trial loads. They secured power from outside the region and
20 the industries have paid the bill.

21 Q I take it those were interruptable contracts?

22 A Right.

23 Q And they were not interrupted?

24 A Well, they were interrupted by Bonneville and Bonneville had --
25 the industries have what we call an interruptable replacement
26 arrangement with Bonneville.

27 Q But the user didn't have an interruption?

28 A The user didn't have an interruption; they just paid a higher

1 cost.

2 Q Okay, which was something, of course, they knew could happen
3 by contract?

4 A This is the reason that Bonneville sells on an interruptable
5 basis, so that they can cut back.

6 Q And then you also discussed with Mr. Bellingham the question
7 of dipping into reserves?

8 A Yes.

9 Q Well, if you never dipped into reserves, I suppose you'd never
10 have to have reserves; would you?

11 A You would not have to have, no.

12 Q I want to put on the board, if I can -- (MR. SHENKER GOES TO
13 DRAWING BOARD) -- a graph. When we get to the year 1973, and
14 we have a conservation factor in the Pacific Northwest; and
15 what you were describing to Mr. Bellingham was the fact that
16 you can have one year's load growth deferred by conservation?

17 A That was the estimate that I made. You could reduce the loads
18 by one year's growth.

19 Q Okay, now, for some systems in the Pacific Northwest for that
20 year, 1973, looked like this, didn't they, fairly flat, show-
21 ing no growth?

22 A That's right.

23 Q Alright, now, some of the projections that we have seen from
24 utilities of the Pacific Northwest and elsewhere, have their
25 current projections looking something like this, that will be
26 table number 1; you've seen projections like that, haven't you?

27 A I don't recall, but go ahead.

28 Q You know, it shows the flattening out in the year 1973 and you

1 catch up to where you --

2 A Right, right.

3 Q Another way of projecting would show the flattening out effect
4 as the basis from which you grow thereafter?

5 A Yes.

6 Q And I would call that number 2 for the purposes of illustration.
7 Now, as between number 1 and number 2, which is your favorite
8 scenario of what you think is going to happen?

9 A Well, I'm going to have to use an explanation here as to what
10 you get. Let's assume that this flattening out was due exclu-
11 sively to conservation, as number 1 in our assumptions. If
12 that's true for conservation, and then you had a conservation
13 program and you did not continue the conservation program,
14 you would go back to number 1. Alright, now let's suppose
15 that you continue an active conservation program and you've
16 got acceptance of it. I think if people understand it, they
17 will accept it. If that's the reason for it, I would think
18 that you'd go to number 2; if you forever save this one year's
19 load growth, you don't just miss it for a year. Now, if this
20 is due to a recession, which some of our current ones -- not
21 '73 -- but currently is, I think you go back when it's due to
22 a recessionary factor. But I think that you can maintain that
23 year's saving in load growth by an active and continuous con-
24 servation program.

25 Q Good. Now that's what I thought that you meant, Bernie; then,
26 if I understand you correctly, when you have first achieved
27 some conservation effect, it is both possible and desirable to
28 continue to maintain those conservation measures which will

1 preserve the conservation effect and indeed, therefore, lower
2 the pace on which your future projections should be made?

3 A Yes, but I would also go further and say, you can't later on
4 get another year's effect in here because you've already
5 pushed people down to the level which they're not wanting to
6 go below, in my view, to take the conservations which I took,
7 which is about 5 percent. They get too cold is another factor.
8 But what you're saying is right; if you keep on after this con-
9 servation thing, I think that you can maintain that one year's
10 load differential.

11 Q And that assumes that you are maintaining the same level of
12 conservation activity?

13 A That's right.

14 Q A greater level of conservation activity may be difficult to
15 achieve, but it would achieve, therefore, more of a dampening
16 of load growth?

17 A Right.

18 Q Now, in discussing with Mr. Bellingham alternatives to the
19 Colstrip units 3 and 4, one alternative that you do note is
20 the necessity for a cutback in loads?

21 A Right.

22 Q Would it be correct that one way to achieve the cutback in
23 loads is simply by watching and seeing what happens and perhaps
24 the loads now forecasted will be too high; that's a possibility,
25 isn't it?

26 A Well, but then you'd be too late.

27 Q Perhaps.

28 A And the argument I would give is that you should, such as this

1 letter from the Bonneville; you should be working on curtail-
2 ment plans now at various levels, not knowing what level you're
3 going to have to cut back.

4 Q You should be prepared to meet the curtailment programs?

5 A Right.

6 Q Now, I take it that another way of looking at the cutback of
7 loads is that in your analysis, with or without the Colstrip
8 units 3 and 4, you're going to have to do the curtailing any-
9 way?

10 A That's correct.

11 Q So you have that responsibility in planning right now?

12 A Right, it's just a question as to how much load you cut back.

13 If you don't have Colstrip 3 and 4, obviously the loads are
14 going to have to be cut back more than if you do have.

15 Q Okay. Then the figure, I think, we looked at for the entire
16 Pacific Northwest area was about 4 percent?

17 A I don't remember, but somewhere in that neighborhood would be
18 about right.

19 Q If we were looking at a larger resource base, then we'd be
20 talking about a smaller percentage?

21 A Right, that's possible. Colstrip would make a difference of
22 about 4 percent.

23 Q Fine. You also referred to a potential alternative as that of
24 additional combustion turbines?

25 A Right.

26 Q Did you mean by that, building combustion turbines to take up
27 the slack?

28 A Yes.

1 Q Okay. You know, of course, that there exists combustion tur-
2 bines which could be used by the utilities?

3 A I would assume that the combustion turbines that now exist
4 would be used in emergency situations. That would not fill
5 the bill as it appears now as happening; that you would have
6 to have more cutbacks than that, and the question would be
7 constructing more and whether it would be feasible -- I mean
8 feasible from an environmental standpoint -- to construct more
9 combustion turbines. Also, from a standpoint that they use
10 oil, and rather large amounts of oil because they aren't very
11 efficient in fuel use.

12 Q For some companies you know that the combustion turbine capa-
13 bilities which now exists would meet all of their otherwise
14 projected --

15 A Yes, I'm talking about the region as a whole.

16 Q Okay. And I suppose, too, that another alternative to building
17 Colstrip 3 and 4 is to build other units some place, even though
18 you couldn't meet the initial time frame of 1980 with a coal-
19 fired generating station that has not yet been site selected?

20 A No, it would take you longer; you'd have a period here in which
21 you'd have to cutback loads. I think that the figures that
22 Glen Bredemeier gave the other day are relatively conservative
23 figures on how soon it would take to build additional plants.

24 Q Would the milestone figures in the West Group be reasonably
25 accurate figures?

26 A Reasonably accurate. They don't take into account the period
27 that I'm particularly concerned about of how long does it
28 take before you find a viable site to file on. And this may

1 take longer than the period that, I think, Glen was indicating.
2 There are so many studies that have to be made; and we found
3 situations, for example, that indicate that maybe longer time
4 should be taken, such as the problem that Pacific Gas and
5 Electric is having at Diablo now.

6 Q That's down in California?

7 A Yes, Southern California, right. And, I think, that time
8 might expand rather than contract. I think the construction
9 time, I would pretty much agree with what Mr. Bredemeier re-
10 ported.

11 Q Okay, the last thing that I wanted to -- two last things.
12 One was the question of the national load growth that you
13 referred to in your redirect examination; you referred to a
14 national trend of about 7 percent over a long period of time
15 but you can't use historical extrapolations alone; you have to
16 make judgments?

17 A Right.

18 Q We do know, do we not, that this last year when you compared
19 the last quarter of 1974 with the last quarter of 1973, there
20 was an actual decrease nationally?

21 A Yes. However, I would -- there has been some analysis made of
22 the factors in that decrease; and the factors that are in de-
23 crease are the industrial load. Residential loads have con-
24 tinued to expand. And it would only be one of the cases that
25 we were talking of here where you're in a recession and you
26 come back out when you got back to full employment.

27 Q Well, of course those studies are not yet definitive; even the
28 analyses that suggest that its industrial load don't tell us

1 whether the flattening of the industrial load, actually, the
2 decrease in industrial load, comes from a recessionary pressure
3 alone or comes from the decision of industry to minimize their
4 consumption of electricity; like the fellow that you told us
5 about in the wood products plant in Oregon?

6 A Yes. I think, though, that if you compare this with the
7 current levels of industrial production, you would find that
8 it's due to a decrease in industrial production.

9 Q Have you done that?

10 A I haven't done it, but I have worked with the industrial
11 production figures though; they are down in many industries.

12 Q Have you compared the relationship between the years 1975 and
13 1974 in the Pacific Northwest?

14 A No, we don't have complete data yet on 1975.

15 MR. SHENKER: I have nothing else. Thank you very
16 much.

17 MR. BELLINGHAM: Nothing more.

18 HEARINGS EXAMINER: No further questions; you're
19 excused. Thank you very much, sir. Next witness?

20 (WITNESS EXCUSED)

21 MR. BELLINGHAM: We'll call Robert Lisbakken.

22
23 R. B. LISBAKKEN, called as a witness by the Applicants, having been
24 first duly sworn upon his oath, both as to his written direct testi-
25 mony and as to the oral testimony to follow, was examined and
26 testified as follows:

27
28 MR. BELLINGHAM: And I'll hand the written statement

1 of testimony of Mr. Lisbakken to the reporter, and I
2 offer into evidence the following exhibits, Applicants
3 Exhibits as follows: 21, 21-A, 21-B, 21-C, 21-D, 21-E,
4 21-F, 21-G, 21-H, and 115-E.

5
6 (THE WRITTEN DIRECT TESTIMONY OF MR. R. B. LISBAKKEN WAS
7 DIRECTED TO BE INSERTED AT THIS POINT.)
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1 STATEMENT OF TESTIMONY OF R. B. LISBAKKEN

2
3 My name is R. B. Lisbakken, my business address is 920 S.W. Sixth
4 Avenue, Portland, Oregon, and I am vice president, power resources, of
5 Pacific Power & Light Company.

6 I attended Oregon State University and received a Bachelor of Science
7 degree in engineering in 1942. I have been a registered professional engi-
8 neer in Oregon since 1947. I was employed as an engineer with Allis-Chalmers
9 Manufacturing Company in Milwaukee, Wisconsin, and Boston, Massachusetts, in
10 1942 and 1943, and in the Electrical Division of the Bureau of Ships, Navy
11 Department, in Washington, D.C., from 1943 to 1946. I have been employed by
12 Pacific Power & Light Company in various engineering capacities during the
13 past 29 years, including engineering assistant and electrical engineer in the
14 engineering department, senior development engineer and manager of system
15 resources and power contracts in the development department, and assistant
16 chief engineer and manager rates and power resources in the general operations
17 department. I was elected a vice president in December 1968.

18 My present responsibilities include load forecasting, resource planning,
19 scheduling of power plant output and purchased power arrangements on an hourly
20 and seasonal basis and negotiating power purchase and sales contracts with
21 other utilities and federal agencies.

22 I am familiar with the peak and energy loads, the power supply contracts,
23 the hydroelectric and thermal generating resources of the company.

24 Applicants' Exhibit No. 21 is a table titled "Pacific Power & Light
25 Company, Sources of Energy and Peak Capability, Year 1974," and shows the
26 major sources of supply for meeting the company's peak load and energy re-
27 quirements for the 12 months ended December 31, 1974. These sources include
28 company-owned hydroelectric and thermal generation, purchases from nonasso-

1 ciated utilities, the Bonneville Power Administration, long-term purchases
2 from various Public Utility Districts and miscellaneous purchases. Exhibit
3 No. 21 was prepared under my supervision, direction and control and is true
4 and correct.

5 The heading "Special Sales" shown on Line 18 of Exhibit No. 21 includes
6 temporary firm sales from the Dave Johnston No. 4 Unit to Idaho Power Company
7 and The Montana Power Company. These sales terminated September 30, 1974,
8 under the terms of the contract. Temporary firm sales were also made of 5.8
9 percent of the Centralia plant output to the United States Bureau of Reclama-
10 tion, Central Valley Project (CVP). This sale terminated March 31, 1974, under
11 the terms of the contract. A temporary sale of firm capacity from the Libby
12 combustion turbine was made to the Bonneville Power Administration in exchange
13 for secondary energy. This nonrecurring exchange terminated June 30, 1975.
14 The balance of special sales was secondary sales to various utilities and
15 industrial loads in the Northwest and secondary sales to California utilities
16 on the Northwest-Southwest Intertie. The heading "System Net of Special Sales"
17 shown on Line 19 of Exhibit No. 21 is the difference between the Total on
18 Line 17 and Special Sales on Line 18.

19 The company's commitments for additional generating capability in the
20 next ten years are shown on Applicants' Exhibit No. 21-A. This exhibit is
21 a table titled "Pacific Power & Light Company, Generating Units Planned or
22 Under Construction," which shows the units, type of fuel, location, nameplate
23 rating, Pacific's ownership percent and megawatts and the expected date of
24 completion. This exhibit was prepared under my supervision, direction and
25 control and is true and correct.

26 Pacific Power & Light Company has committed to participate in the owner-
27 ship of all of those units on Exhibit No. 21-A to the extent indicated.
28 Pacific will require the output from the units to meet its forecasted energy

1 and capacity requirements. The dates shown for expected date of completion
2 are the latest available information, or our judgment of when we may expect
3 completion of those units.

4 Pacific periodically prepares estimates of system loads which it will be
5 required to meet in the future. Load forecasts of both peak and energy re-
6 quirements are prepared as a part of our power supply planning. These are
7 prepared under my supervision and direction.

8 Applicants' Exhibit No. 21-B titled "Pacific Power & Light Company,
9 Estimated Peak Responsibility and Resources," shows the latest peak and energy
10 requirements forecast for the total Pacific Power & Light Company system and
11 reflects the current long-range planning forecasts. The exhibit was prepared
12 under my supervision, direction and control and is true and correct.

13 For long-range planning purposes, the total Company energy load is
14 estimated for a 12-month operating period beginning July 1 and ending June 30
15 of each year based on a long-term trend of historical energy input to the
16 system. The peak load for the operating year will normally occur in December
17 or January, depending upon weather conditions, and occasionally has occurred
18 as early as November and as late as February. For planning purposes, we
19 assume the peak load will occur in December and, using historical experience
20 and projected energy loads, we have estimated the peak load that might occur
21 in a relatively cold winter which would not be exceeded in nine out of ten
22 years. This historical analysis indicates that December peak load will be
23 about 1.7 times the average annual energy load and will result in about a 57
24 percent annual load factor. We therefore plan system resources to meet this
25 estimated winter peak load and annual energy requirement.

26 With respect to the peak and energy load growth requirements for which the
27 company must provide during the next ten years, Exhibit No. 21-B indicates on
28 Line 15 that the load growth requirements which must be met during the next

1 ten years will total 2,779 megawatts peak and 1,655 megawatts of energy
2 between 1975-76 and 1985-86. In addition to this load growth requirement,
3 there are several purchased power contracts that the Company has, principally
4 those for the Priest Rapids, Wanapum, Wells, Rocky Reach and Swift #2 Projects,
5 which have withdrawal provisions under which the sellers may withdraw certain
6 amounts of the project output presently purchased by the Company. Further,
7 certain contracts with the Bonneville Power Administration for the purchase
8 of peak either expire or are subject to withdrawal on five years' notice.
9 Because we anticipate some of this withdrawal particularly from projects
10 having an energy supply, the Company must plan to install or contract for the
11 purchase of enough generating capability to replace some of the 1,020 megawatts
12 of peak and all of the 257 megawatts of energy shown on Line 16 of Exhibit
13 No. 21-B which are subject to loss through possible withdrawal as well as
14 expiration during this ten-year period. As the Company installs additional
15 generating units, it is required to provide additional amounts of capacity for
16 forced outage reserves for these units. The estimated amount of capacity re-
17 quired for forced outage reserves during this ten-year period is 382 megawatts
18 as shown on Line 18.

19 The total possible additional resources required, shown on Line 18, to
20 cover load growth for the ten year period, to replace contract terminations and
21 possible withdrawals, and to cover forced outage reserves will require as much
22 as 4,181 megawatts of capacity and 1,912 average megawatts of energy. While
23 the Pacific Northwest has an indicated sufficiency of capacity if scheduled
24 units are installed, there is an energy deficiency through 1985-86 in both the
25 Pacific Northwest and in the total Pacific Power & Light Company system.

26 We have recently reduced the load projections for Pacific. We continually
27 review our load projections and revise them as necessary to take into account
28 actual experiences in past load growth, and, to the extent that we can

1 formulate it, any change in conditions affecting future load growth. Speci-
2 fically, if a lower level of load growth indicates over a period of time that
3 we have shifted to a new absolute level, we will modify the base from which
4 further projections are made. Thus, in 1973, when worse than critical water
5 conditions occurred throughout most of the water year and the utility systems
6 in the Northwest Power Pool were conducting vigorous public conservation
7 measures and programs urging voluntary conservation, there was a substantial
8 cut-back in energy consumption in the Oregon, Washington and California
9 portion of the system. In 1974, the reduced load was apparently due to a
10 business recession as well as an undetermined amount of conservation. The
11 actual unadjusted increase in total Company load in 1974 was about 2.9 percent
12 above 1973. The unadjusted load growth for 12 months ending November 1975
13 has been about 5 percent above the same period in 1974. Nonetheless, there
14 has probably been some permanent energy conservation as a result of this
15 program, which indicated the desirability of reducing the base from which
16 projections are made.

17 As the result of these two factors of conservation and recession the base
18 used for the forecast in Exhibit No. 21-B previously described is an actual
19 load as experienced in 1974. Because the economic conditions have been
20 improving, our projections of growth after 1975 are carried at an average rate
21 of growth of 6.2 percent.

22 Regarding the expected effect of continued conservation, the projections
23 reflect what we would expect to be the result from the present level of vol-
24 untary conservation. They do not reflect the effect of any mandatory conser-
25 vation measures that might be instituted by government agencies, since we have
26 no way of determining what such mandatory measures might be, nor if or when
27 they would be instituted. Offsetting any effect of voluntary conservation by
28 the citizens is the difficult problem of predicting the effect of the relative

1 scarcity and expensiveness of alternative forms of energy. In the Pacific
2 service territory, in the past, natural gas and electric heating have been the
3 principal competitors for home heating in new housing units. In the Pacific
4 service territory, excluding Wyoming, electric heating in new housing units
5 jumped from about 60 percent of new installations in 1972 and 1973, to 76
6 percent in 1974 and to 86 percent in the first eleven months of 1975. This
7 undoubtedly reflected both the scarcity of additional supplies of natural gas
8 and a reluctance on the part of some of the buying public to commit themselves
9 to a form of fuel that might not be continuously available.

10 Conservation efforts during 1973 in the Northwest Power Pool area con-
11 served an estimated 6 percent during the time that extensive newspaper and
12 television emphasis on voluntary conservation was on during the fall months of
13 1973. While we continue to advocate conservation and the wise use of energy,
14 it is doubtful that we are getting that much reduction today. Because of the
15 long lead time required for resource construction and economic forecasts that
16 the recession will bottom out in 1975, we have assumed the future forecast at
17 the rate about equal to the historic rate of growth. This assumes that the
18 accelerating switch to electric heating rather than other forms of energy may
19 well increase our load or at least offset any reduction in use as a result of
20 conservation.

21 A change has been made in the schedules of units that Pacific is con-
22 structing (Exhibit No. 21-A), but this change was only indirectly the result of
23 the reduced load forecast. Jim Bridger Units No. 3 and No. 4 and the Wyodak
24 unit have been delayed, both for the reduced load forecasts and the expected
25 improvement in economic conditions which should reduce the cost of economically
26 financing the projects. The units being constructed by others have been
27 changed in our planning estimates to coincide with the latest information
28 available as to the expected date of completion or our best judgment when they

1 could be expected to be in operation.

2 We have examined the affect upon the resources available to Pacific if
3 Colstrip Units No. 3 and No. 4 are substantially delayed beyond their presently
4 scheduled dates. Even assuming that all units upon which Pacific is now
5 relying for service after 1979 remain on schedule, which in view of experience
6 is an optimistic assumption, Pacific will have recurrent energy deficiencies
7 through 1985. If Colstrip Units No. 3 and No. 4 are substantially delayed, it
8 will be essential that Pacific replace that generation with a source of
9 equivalent supply in 1980 and 1981. I am not aware of any unit that has
10 necessary governmental approvals to proceed with construction that can be made
11 available to Pacific in this relatively short time frame. The only other
12 resource that could be brought on the line in a comparatively short time would
13 be combustion turbines, the operation of which to replace the energy shortage
14 resulting from a delay in Colstrip would be highly expensive to the customers
15 of the Company and would also impose further burden upon petroleum fuels.

16 Pacific dropped all promotional advertising in the fall of 1972 and since
17 that time its advertising in the field of electric consumption has been
18 exclusively devoted to conservation measures and I have already described how
19 we have taken conservation into account in making our load forecasts.

20 The additional generating capability the Company plans to construct
21 through August of 1986 totals 2,611 megawatts as shown on Exhibit No. 21-A,
22 but we show additional resources required through June of 1986 of 4,181 mega-
23 watts on Exhibit No. 21-B. We expect to meet the additional capacity require-
24 ments of 1,570 megawatts by being able to continue purchasing peak capacity
25 from the Bonneville Power Administration or exchange energy for peak for such
26 peaking capacity if the Federal Government adds additional units at its North-
27 west hydroelectric projects. In the event we are unable to purchase or
28 exchange for such peaking capacity, Pacific will be required to install

1 additional peaking units in its own projects, participate in pumped storage
2 projects or install combustion turbine units.

3 Turning once again to Exhibit No. 21-A, the question has been raised as
4 to how much average annual energy Pacific expects to obtain from the thermal
5 resources planned or under construction as shown in the foregoing exhibit. The
6 energy that Pacific may obtain from these projects, of course, will be limited
7 by the plant availability, maintenance and refueling requirements, fuel avail-
8 ability and other operating limitations that might be placed on the plants,
9 but we have assumed in our planning studies that approximately 1,700 average
10 megawatts will be available from these units as of August 1986, which is still
11 short of Pacific's potential requirements of 1,912 average megawatts. This is
12 obviously very tight planning without contingency for further delay of pro-
13 grammed units.

14 Turning next to how power is transferred between the various portions of
15 the Company's system, the Company's electric operations in Montana, Oregon,
16 Washington, California and Wyoming are integrated and operated as a single
17 system by scheduling the resources and power contracts to meet the power re-
18 quirements of those five states. Transfers in either direction between the
19 different portions of the system are made through wheeling arrangements with
20 the intermediate systems of The Montana Power Company, Utah Power & Light
21 Company, Idaho Power Company, The Washington Water Power Company, and the
22 Bonneville Power Administration, all of whose lines connect with transmission
23 lines of the Company at various points.

24 The Montana portion of the system, in the Libby and Kalispell areas of the
25 state, is interconnected with the other portions of the system through trans-
26 mission facilities of the Bonneville Power Administration and The Montana Power
27 Company, which connect at various points with the Company's transmission
28 facilities.

1 The areas which the Company serves in Oregon, Washington and California
2 are interconnected through Company-owned transmission facilities or through
3 integration and transmission agreements with the Bonneville Power Adminis-
4 tration and various utilities.

5 The Wyoming portion is interconnected through Company-owned transmission
6 facilities and reciprocal wheeling arrangements and multiple interconnections
7 with the U. S. Bureau of Reclamation. Pacific's Wyoming area is intercon-
8 nected with The Montana Power Company on the north and Utah Power & Light
9 Company and Idaho Power Company in the southwest part of Wyoming.

10 The Idaho portion of the system, in the Sandpoint area, is presently
11 supplied by The Washington Water Power Company under a power purchase contract
12 and no transfers are shown in our Exhibits by Pacific to or from that area or
13 to The Washington Water Power Company for that area's supply until 1982.

14 The power resources of the Company are available to supply demands of the
15 Company in all of the states in which the Company operates. We make necessary
16 transfers as a regular practice for both operating and economic reasons. For
17 example, as part of establishing the firm load carrying capability of the
18 Company, Pacific will plan on firm power transfers from one area to another
19 when the first area has firm resources in excess of its load requirements.

20 In the event of forced or scheduled maintenance outages of generating units,
21 such as the Centralia, Jim Bridger or Dave Johnston plants, the generation in
22 one area is increased and transferred to the area experiencing the shortage.

23 This occurred in both directions at various times in calendar year 1974. In
24 addition, emergency assistance from neighboring utilities in the Rocky Moun-
25 tain area was delivered to the Company in Wyoming and rescheduled to the
26 Montana and Oregon-Washington-California portions to cover outages at the
27 Centralia plant.

28 Turning next to the location and magnitude of Pacific's load in the state

1 of Montana, Pacific supplies electric service to the Libby area in Western
2 Montana and to the Kalispell-Whitefish area in the Flathead Valley. Both of
3 these areas have had a steady and continuous growth over the past 12 years.
4 For instance, the average energy load in these two areas has increased at a
5 compound annual rate of 8 percent from 1962 to 1969 and 7.4 percent from 1962
6 through 1974. Projecting the area load for the next ten years at only 6.0
7 percent per year growth rate indicates the peak load could reach 189 megawatts
8 by 1985.

9 The largest class of electric customers in Montana in 1974 was residen-
10 tial, which received 43.3 percent of the kilowatt-hour sales to ultimate
11 consumers. The industrial group received 29.4 percent, the commercial group
12 received 26.4 percent, and miscellaneous 0.9 percent.

13 Applicants' Exhibit No. 21-C titled "PP&L Co. Montana Estimated Peak
14 Responsibility and Resources (Including Units 3 & 4)" shows the forecasted
15 December peak load and peak reserve in megawatts for Pacific's Montana system
16 for the operating years 1975-76 through 1985-86. Exhibit No. 21-C was prepared
17 under my supervision, direction and control and is true and correct.

18 Applicants' Exhibit No. 21-D titled "PP&L Co. Montana Estimated Energy
19 Loads and Resources (Including Units 3 & 4)" shows the annual average energy
20 load in megawatts for Pacific's Montana system for the operating years 1975-76
21 through 1985-86. The exhibit was prepared under my supervision, direction and
22 control and is true and correct.

23 Exhibits No. 21-C and 21-D show, that to meet its peak load responsibility
24 and energy load in Montana, Pacific will need its 10 percent share of Colstrip
25 Units No. 3 and No. 4. None of the Colstrip Units No. 3 and No. 4 peak will
26 be surplus, except for a small amount in 1981-82 and only small amounts of energy
27 would be available for export from Montana between 1981 and 1987, if the plant
28 can operate at a 75 percent average annual plant factor. Even with Colstrip

1 units No. 3 and No. 4, Pacific must import peak in all of the next ten years,
2 except in 1981-82.

3 Applicants' Exhibit No. 21-E titled "PP&L Co. Montana Estimated Peak
4 Responsibility and Resources (Excluding Units 3 & 4)" shows the Montana peak
5 load of Pacific in megawatts for the operating years 1975-76 through 1985-86.
6 The exhibit was prepared under my supervision, direction and control and is
7 true and correct.

8 Applicants' Exhibit No. 21-F titled "PP&L Co. Montana Estimated Energy
9 Loads and Resources (Excluding Units 3 & 4)" shows the Montana energy load of
10 Pacific in megawatts for the operating years 1975-76 through 1985-86. The
11 exhibit was prepared under my supervision, direction and control and is true
12 and correct.

13 Exhibits No. 21-E and 21-F show that without Colstrip Units No. 3 and
14 No. 4 Pacific will have a deficiency in its peak and energy resources in
15 meeting its requirements in Montana assuming the same imports of capacity
16 into Montana as with Colstrip Units No. 3 and No. 4.

17 Applicants' Exhibit No. 21-G titled "Pacific Power & Light Company,
18 Montana Estimated Peak Responsibility and Resources" shows the estimated peak
19 load for Pacific's Montana system, reserve requirement, resources, and im-
20 ports, including Colstrip Units No. 3 and No. 4 on the top half of the sheet,
21 and excluding Colstrip Units No. 3 and No. 4 on the bottom half of the sheet.
22 The exhibit was prepared under my supervision, direction and control and is
23 true and correct. The difference between the total peak load plus reserves
24 on Line 3 of Exhibit No. 21-G and the total resources on Line 7 is indicated
25 on Line 8 which shows the surpluses or deficiencies, including Colstrip Units
26 No. 3 and No. 4. Similarly Line 15 shows the surpluses or deficiencies ex-
27 cluding Colstrip Units No. 3 and No. 4. The comparison of peak loads and
28 resources is illustrated graphically on Exhibit No. 21-C, including Colstrip

1 Units No. 3 and No. 4, and on Exhibit No. 21-E, excluding Colstrip Units No. 3
2 and No. 4.

3 Applicants' Exhibit No. 21-H titled "Pacific Power & Light Company,
4 Montana Estimated Energy Loads and Resources" shows the estimated energy loads
5 and resources in average megawatts for Pacific's load in Montana, including
6 Colstrip Units No. 3 and No. 4 on the top half of the sheet, and excluding
7 Colstrip Units No. 3 and No. 4 on the bottom half of the sheet. The exhibit
8 was prepared under my supervision, direction and control and is true and
9 correct. The difference between the estimated energy load and the resources
10 are shown on Line 6 of Exhibit No. 21-H, including Colstrip Units No. 3 and
11 No. 4, and on Line 11, excluding Colstrip Units No. 3 and No. 4. The com-
12 parison of energy loads and resources is illustrated graphically on Exhibit
13 No. 21-D for energy loads, including Colstrip Units No. 3 and No. 4, and on
14 Exhibit No. 21-F for energy loads, excluding Colstrip Units No. 3 and No. 4.

15 I will next analyze Exhibits No. 21-G and 21-H with respect to import
16 quantities with and without Colstrip Units No. 3 and No. 4. During the
17 operating year 1982-83 with Colstrip Units No. 3 and No. 4 in service,
18 Pacific would still require 7 megawatts of capacity imported from its
19 resources in other states as shown on line 6 of Exhibit No. 21-G, with the
20 amount increasing in later years with load growth. Without Colstrip Units
21 No. 3 and No. 4, the import of capacity is assumed to be the same as with
22 Colstrip Units No. 3 and No. 4 or 7 megawatts in 1982-83, and increasing in
23 later years as shown on Line 13 of Exhibit No. 21-G. The energy import with-
24 out Colstrip Units No. 3 and No. 4 is assumed at 50 percent of the capacity,
25 which approximates the Montana annual load factor, hence 3 megawatts for
26 1982-83 and increasing thereafter as shown on Line 9 of Exhibit No. 21-H.
27 With that assumption, Pacific's resources available for Montana load are
28 deficient in meeting the requirements in the year 1981-82, by 126 megawatts of

1 peak, as shown on Line 15 of Exhibit No. 21-G, and 69 megawatts of average
2 energy as shown on Line 11 of Exhibit No. 21-H. These peak deficiencies are
3 approximately equivalent to Pacific's share of Colstrip Units No. 3 and No. 4

4 I would like to point out the reason for the slight difference between
5 the peak deficiencies shown on Exhibit No. 21-G and indicated peak deficiencies
6 graphically shown on Exhibit No. 21-E. Although the peak deficiency in 1981-82
7 without Colstrip Units No. 3 and No. 4 is 126 megawatts, from Exhibit No. 21-G,
8 the indicated deficiencies graphically illustrated on Exhibit No. 21-E show
9 115 megawatts peak deficiency. This is because the combustion turbine is
10 included in the Pacific Power & Light Company generation at Lines 4 and 12 of
11 Exhibit No. 21-G. A combustion turbine should not be considered as a normally
12 operated generating facility, but only an emergency reserve unit, as is in-
13 dicated by the use of a dashed line on Exhibits No. 21-C and No. 21-E. While
14 available physically in the state of Montana, the combustion turbine would not
15 normally be run, except for transmission outages or unit forced outage
16 emergency situations, since fuel costs make it too expensive for supplying
17 normal system energy loads.

18 The reason we have not shown greater energy imports into Montana begin-
19 ning in 1980-81 on Exhibits No. 21-F and 21-H is because the total Company is
20 substantially energy deficient in all years after 1980 without Colstrip Units
21 No. 3 and No. 4, as is the region. I have already testified that I am not
22 aware of any energy sources not now scheduled, except combustion turbines,
23 that could be brought into service for 1980, indeed for some years thereafter.
24 Thus, without Colstrip Units No. 3 and No. 4, there is no way in which the
25 Montana load of Pacific can be carried, except by withdrawal of energy from
26 service to firm loads in other states.

27 Applicants' Exhibit No. 115-E is the Pacific Power & Light Company's
28 Annual Report to its stockholders for the year 1974. The exhibit is one

1 prepared every year by the Company and was prepared in the usual and ordinary
2 course of business of the Company.
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Cross, by Department of Natural Resources and Conservation

By Mr. Shenker:

Q Mr. Lisbakken, in your statement of testimony, you referred to secondary sales made by PP&L to California; what do those mean?

A Those would be classed as surplus in Bernie Goldhammer's definition.

Q And they would include dump sales for part of what has been sold?

A Yes.

Q Now, in your statement of written testimony, Mr. Lisbakken, you have what some folks call "waffle words", otherwise known as lawyer's words, on page 4 in describing your load resource projections. Starting at line 2, the sentence that refers in some very positive terms to a load growth requirement; it goes down three more lines and describes projects that have withdrawal provisions under which the sellers may withdraw certain amounts of the project; did you notice that?

A Yes.

Q And as you go down a little bit further, you talk about the anticipation of some of that withdrawal; and as you go down further, you talk about the capability to replace some of 1,020 megawatts of peak; and in the next paragraph when you talk about additional resources required, you describe them quite carefully as possible additional resources required; and again you use the term "possible" for some of the withdrawals. If you would turn with me, Mr. Lisbakken, to your current

1 edition of Exhibit number 21; the fact of the matter, sir, is
2 that you have listed at line 16 all 1020 megawatts of peak
3 which could possibly be withdrawn over that entire period of
4 time, which you have described in Exhibit number 21-B, as a
5 megawattage which you must replace because, in line 18, you
6 describe them as "total additional resources required"; isn't
7 that correct?

8 A That's what the exhibit shows, yes, sir.

9 Q Now, wouldn't it have been more correct, Mr. Lisbakken, and
10 less misleading, indeed, to have said in line 18, "total
11 additional resources possibly required"?

12 A Yes.

13 Q Sure, because you don't want this Board of Natural Resources to
14 believe that you must certainly have 4,181 megawatts of peak
15 over that entire 10 year period, otherwise you won't meet peak
16 requirements; but that's not something that you're planning at
17 this point, is it?

18 A I'm not planning the replacement of the peak at the moment,
19 but I do expect to have to replace the energy resources.

20 Q We'll talk about those separately as well. Now, you, of
21 course, like the other applicants in the proceeding, have re-
22 duced your load projections. When did you last reduce those
23 load projections?

24 A Oh, they're under continual review, but I think the most recent
25 revision was made in about November.

26 Q Of 1975?

27 A Of 1975, yes, sir.

28 Q In 1974, of course, you had a reduced load, which you attribute

1 both to a recessionary and conservation?

2 A Yes.

3 Q And you're unable to qualify how much was due to which?

4 A Right.

5 Q Your actual unadjusted increase in your company load in 1974
6 over 1973 was something less than 3 percent?

7 A Yes.

8 Q Alright. Now, you don't have any doubt, of course, that there
9 has been some permanent energy conservation which has had a
10 dampening effect upon load growth; do you?

11 A Possibly.

12 Q Well, you see, based upon your presumption that there was a
13 permanent energy conservation, you did reduce the base from
14 which your projections would be made thereafter; isn't that
15 true?

16 A Yes.

17 Q Did you check with your sister utilities before you did that
18 to see whether they were all doing that?

19 A No.

20 Q Do you know whether they are?

21 A I believe some of them have; I have not seen all the figures
22 from all of the utilities.

23 Q Now, on page 6, line 3 of your statement, you refer to the
24 Pacific service territory, excluding Wyoming; why do you ex-
25 clude Wyoming?

26 A It's a state with natural gas and oil production of its own,
27 and the amount of new homes going to all electric is not as
28 great as in the other states that do not have natural gas in

1 their own state in sufficient quantities.

2 Q You mean, if you included Wyoming in your service territory,
3 your percentage of new housing units using electric heating
4 would be lower than appears on page 6 of this statement?

5 A Yes.

6 Q How much lower?

7 A Well, Wyoming had 181 electric heat connects in 1975 against
8 3,267 total new home connections of single family, multiple
9 family and mobile home connections.

10 Q A rather small percentage for electric heat?

11 A Yes.

12 Q You, of course, include Wyoming in the integrity of your
13 entire system; don't you?

14 A Yes, as a state it has a higher rate of growth, in total
15 growth, than the other states.

16 Q Now, as a result of your reduced load forecast, Pacific did
17 change the schedules of units which it was the project sponsor
18 for construction of; is that correct?

19 A Yes.

20 Q In other words, you deferred them?

21 A Yes.

22 Q And another reason for your deferring the construction schedule
23 on your system for additional resources, was that you had
24 difficulties in financing the projects if you had maintained
25 the original schedule; is that correct?

26 A I can't speak to that since I don't handle the financing for
27 the company.

28 Q Well, indeed, Mr. Lisbakken, you did speak to that on page 6,

1 line 23, where you attribute the reason for the delay for the
2 Jim Bridger units 3 and 4 and the Wyodak unit as both caused
3 by reduced load forecasts, and if the expected improvement in
4 economic conditions should reduce the cost of economically
5 financing the projects; that's kind of a long way of saying
6 that you deferred both of those resources, both because of
7 reduced load forecasts and in order to ease the financial
8 burden; isn't that right?

9 A Yes, obviously we wouldn't build a project ahead of its need.

10 Q Because of financial burden as well as the load forecast pro-
11 jection?

12 A Yes.

13 Q Now, Pacific has the largest service territory of any of the
14 applicants in this proceeding; isn't that true?

15 A Yes.

16 Q You also have the largest system resources and the largest load
17 projections of all the applicants in this proceeding?

18 A Yes.

19 Q In the Colstrip project, Pacific has the smallest share of any
20 of the 5 applicants; you have a 10 percent share; that's true,
21 isn't it?

22 A Yes.

23 Q So that the most you will ever receive from the Colstrip
24 project is some 140 megawatts?

25 A Yes.

26 Q Now, in all fairness and for practical purposes, Mr. Lisbakken,
27 when you run your loads out to 1986 and you have 6300 megawatts
28 of estimated peak, almost, and you have 3700 megawatts of

1 estimated energy, almost, the 140 megawatts you may get from
2 Colstrip 3 and 4 is not a make or break situation with you; is
3 it?

4 A It's a very significant, important resource from the energy
5 standpoint.

6 Q Do you disagree with Mr. Frisbee in that regard?

7 A I don't think so.

8 Q Who's Mr. Frisbee?

9 A Chairman of the board.

10 Q Chairman of the board of Pacific Power and Light Company?

11 A Yes, sir.

12 Q Well, if Mr. Smith won't tell him, I won't tell him; but you
13 were present when he was deposed; were you not?

14 A Yes; yes, I have it.

15 Q Did you know, Mr. Lisbakken, that it was Mr. Frisbee's view
16 that the Pacific's share of the units 3 and 4 was not of
17 crucial significance?

18 A Crucial is a hard word to express a valuable resource. I'm
19 looking for resources in 25, 50, 100 megawatt size; it happens
20 that Colstrip matches our Montana area load very nicely, so
21 it is a significant and important resource to Pacific in the
22 State of Montana, as well as for our total system.

23 Q You can't look at Montana alone, though, when you have the
24 integrity of the entire Pacific system at stake?

25 A No, sir, but I have to look at the transmission problems of
26 wheeling power into the state as well as supplying reserves
27 and the other things that go with that.

28 Q Sure; and if the Montana Power Company had surpluses and you

1 had need, you could get those from the Montana Power Company,
2 couldn't you?

3 A If they were willing to sell them on a long-term basis. The
4 project at Colstrip gives me a long-term resource.

5 Q Mr. Lisbakken, let me ask you the question directly and direct
6 your attention to page 52, line 13 of Mr. Frisbee's deposition
7 which you have before you. Now, Mr. Frisbee's view was that
8 the 1400 megawatts was significant for the region, but "As far
9 as Pacific itself is concerned, the 10 percent share of Col-
10 strip is not of any great significance." Did you disagree with
11 that view when he stated it?

12 A Well, I can't very well disagree with my boss in the light of
13 which he said it; but, as my responsibility to find resources,
14 to me it is of significance, particularly as time goes by and
15 it's impossible to replace that.

16 Q Sure, it's not Mr. Frisbee's job on a day-by-day basis to find
17 some way to pull in 140 megawatts tomorrow or the day after
18 that or the year after that; he expects you to get that done;
19 right?

20 A Right.

21 Q Yet, as far as the chairman of the board of your company is
22 concerned, it is a fair statement, is it not, that Pacific is
23 not seriously concerned about continuously planning for the
24 loss of a potential 150 megawatts as it is concerned seriously
25 over the broad scale of appropriate regional planning?

26 A Well, the regional is important, obviously. If the region is
27 short, then we're all in trouble. If Pacific alone were short
28 140 megawatts and the region were long, then we could find that

1 resource; but if the region were short, we'd have no place to
2 get that replacement.

3 Q Except outside the region?

4 A If it's available outside the region; it is not presently
5 available on long-term commitments outside the region, to my
6 knowledge.

7 Q Well, you don't disagree that it was Mr. Frisbee's view when
8 his deposition was taken, on page 53, lines 8-13, that it was
9 a fair statement that Pacific was not seriously concerned
10 about continuously planning for the loss of a potential 150
11 megawatts as it was concerned seriously over the broad scale
12 of appropriate regional planning?

13 A Yes.

14 Q Did you disagree with that statement when made?

15 A No.

16 Q That's one for two; that's not bad. Now as you will line up
17 your resources and your loads on Exhibit 21-B, as currently
18 revised, dated December 15, 1975, you tell us that you're
19 going to have some 1570 megawatts of additional capacity re-
20 quirement that you will expect to meet by purchasing peak
21 capacity from Bonneville; that's page 7, line 24 and 25 of your
22 statement?

23 A That capacity purchased, of course, is subject to withdrawal
24 on 5 year's notice and it is very difficult to build a replace-
25 ment capacity resource in 5 years, if not impossible.

26 Q But that's how you expect to meet the additional capacity re-
27 quirements of 1570 megawatts?

28 A Yes, we're hoping we can get that capacity, that the federal

1 government will install it in the existing dams on the federal
2 system so that we can purchase it.

3 Q It's not just an idle hope that you're planning, it's expecta-
4 tion; is it not?

5 A Well, it's our expectation, yes; but contractually, it's a
6 firm resource; it is not certain.

7 Q It's not like death and taxes?

8 A Nor owning your own plant or a share of your own plant.

9 Q Owning your own plant, it turns out, isn't very definite
10 either, when it's a combustion turbine plant and you don't
11 have an oil supply or you don't want to run it because it's
12 uneconomical?

13 A I am not suggesting combustion turbines as replacements for
14 Bonneville peaking.

15 Q Well, we find that as years go by, our views change as to what
16 we thought was the most reliable ways for us to conduct our
17 affairs; isn't that true, Mr. Lisbakken?

18 A Yes.

19 Q You tell us also, that you expect to meet some of your addition-
20 al capacity requirements by exchanging energy for peak; that
21 is your statement, isn't it, on page 7, line 25?

22 A To the extent we have the energy resource to exchange for the
23 peak, yes; and we have, presently, a contract for a finite
24 amount of peaking capacity in exchange for energy.

25 Q Well, you wouldn't have made a foolish statement that you ex-
26 pect to exchange energy for peak unless you had some expectations
27 that you would have some energy to exchange; isn't that true?

28 A Well, yes, that's right.

1 Q Now, looking at the planning that you have, as you described
2 it on page 8 of your statement, on annual average energy, you
3 show, according to your statement, 1700 average megawatts short
4 of potential requirements of 1912 average megawatts. Now, the
5 sentence that I'm most interested in is the one that follows it
6 on page 8, line 11, you say, "This is obviously very tight
7 planning without contingency for further delay of programmed
8 units." I'm curious about that language, Mr. Lisbakken, because
9 I should think that to the casual observer if you have more in
10 the way of requirements than you have in the way of capacity,
11 that's not tight planning, that's disaster; isn't it?

12 A It would be if the loads developed and if we do not get the
13 resources in time.

14 Q You're not planning for a disaster, are you?

15 A No, sir.

16 Q And you think you're going to be able to cover your 1700,
17 excuse me, your 1912 average megawatts, either by having more
18 than 1700 additional units of megawattage available or you
19 will have a lesser load to cover with the resources that you
20 will have available; right?

21 A Yes.

22 Q Now, in the rather far-flung operations of Pacific in the
23 various states in which you are found, you, of course, have to
24 have wheeling arrangements with the various companies in those
25 areas, such as Pacific Power and Light, Idaho Power Company;
26 and you have those arrangements, do you not?

27 A Yes.

28 Q You also have contractual relations and co-sponsorships with

1 some of those companies on generation facilities; do you not?

2 A Yes.

3 Q Do you know whether the Idaho Power Company has interconnections
4 with systems other than those of the 5 applicants in these
5 proceedings?

6 A Yes.

7 Q Does Utah Power and Light Company has interconnections with
8 systems other than those of the 5 applicants in these pro-
9 ceedings?

10 A Yes.

11 Q I'm also interested in page 10 of your statement, Mr. Lisbakken,
12 with the observation that small amounts of energy will be
13 available for export from Montana between 1981 and 1987; how
14 does that happen?

15 A That's speaking in the absolute sense of the difference between
16 the situs load and the situs generation within the state for
17 Pacific.

18 Q I didn't quite hear that; you dropped your voice, sir. That's
19 speaking in the context of?

20 A The difference between the load within the State of Montana
21 and the generation which Pacific has within the State of
22 Montana.

23 Q I see. That's exclusively from a Pacific prospective?

24 A Yes.

25 Q I see. Okay. Now, if you'll turn with me to page 13 of your
26 statement, line 24, I put it to you, sir, the sentence there is
27 not correct in view of the testimony you have already given me.
28 You state that there is no way in which the Montana load of

1 Pacific can be carried without Colstrip units 3 and 4, except
2 by withdrawal of energy from service to firm loads in other
3 states; you've already told me, Mr. Lisbakken, that you expect
4 to cover 1900+ megawatts of average energy with 1700 megawatts
5 of resources because you know that the resources will be
6 greater or the load will be less; and that doesn't require the
7 interruption of firm energy service to others, does it?

8 A Well, they're different time periods, for one thing. The
9 statement about important requirements for the State of Montana,
10 if Colstrip is not built, begins in 1980; and some of the
11 increased energy requirements for our total system will be
12 required, certainly, by 1985-86, which is what line 18 energy
13 requirement is, will require additional thermal energy resources.

14 Q Well, for the year 1985-86, you can go out and plan that
15 tomorrow and you'll have adequate leave time to get that done;
16 don't you?

17 A I hope so.

18 Q But if you want to put back into context, sir, accurately the
19 dates that are involved, on page 8 where you were looking at
20 the varied type planning between 1700 and 1912 average mega-
21 watts, you do not indicate there any years in particular until
22 you get to the end of the total period of your forecast; isn't
23 that true? You don't show when the problem will start on page
24 8, in lines 5 through 13?

25 A That's correct.

26 Q Similarly, on page 13, line 24, you again do you indicate at
27 what time the problem starts or finishes?

28 A Well, that's based on Colstrip coming in in 1980 and '81. We

1 will need greater -- we have a greater requirement for import
2 without the Colstrip units beginning in 1980-81 than with
3 it.

4 Q In your last annual statement, Mr. Lisbakken, the Applicant's
5 Exhibit 115-E, in that annual report to your stockholders, and
6 anybody else who wants to read it -- do you have a copy there?

7 A Yes, sir.

8 Q Page 6; that's the first annual report issued by Pacific in
9 which you even mention Colstrip, isn't it?

10 A It may be; I haven't reviewed 1973 with respect to that point.

11 Q Well, we'll do that later; but I want to look at what you tell
12 your stockholders as to the planning that you are giving to
13 Colstrip. Your statement to your stockholders and others who
14 read this report, at the bottom of the left-hand column of
15 page 6, says, after describing other resources that you have
16 underway or in planning, "Looking ahead to the systems' power
17 requirements for the 1980's, the company is participating in
18 coal-fired and nuclear-fired steam electric projects for which
19 preliminary engineering and construction work is underway."
20 Now, you don't tell your stockholders there that you need the
21 Colstrip units to cover 11 megawatts of deficiency in average
22 energy in 1978-9 or in 1979-80; do you?

23 A No.

24 Q You weren't trying to hide something from your stockholders;
25 it just wasn't one of your plans at that time; right?

26 A Well, the unit was one of the plans, yes; but the detailed
27 load resource picture is continually changing and rather a
28 complicated subject to explain in entire detail to a customer

1 or a stockholder.

2 Q Okay. Well, let's talk about how your load forecasts changed
3 some. Do you have with you both the original Exhibit 21-B of
4 April 11, 1975, and the current revised edition of December 15,
5 1975?

6 A Yes.

7 Q Okay. Exhibit number 21-B has some 25 lines on it in its
8 first form, and in the current form it has 18 lines, that is,
9 numbered lines; right?

10 A 21-B for Boston?

11 Q Yes.

12 A Yes, sir.

13 Q I hope I'm comparing the right pages. They aren't set up
14 exactly the same; but it looks like the same information
15 appears on both. Would you prefer that we looked at another
16 page?

17 A Well, I'm looking for my previous exhibits.

18 Q That's the closest one I could find.

19 A Yes, the original 21-B was just total load and did not show
20 resources. The revised 21-B shows revised source load and
21 resources; right.

22 Q By the way, Mr. Lisbakken, that raises a question in my mind.
23 When you first prepared your Exhibit number 21-B without any
24 indication of total system resources, I suppose it would not
25 have been possible for somebody who was looking at the exhibit
26 prepared by each of the applicants to make a total of what all
27 of their resources were based upon the exhibit that you sub-
28 mitted; that would be correct, wouldn't it?

1 A Yes.

2 Q So in the new revised edition, you have included resources as
3 you presently project them for the purposes of this proceeding?

4 A Yes.

5 Q Now, there are some differences that I want to take a look at
6 with you; and we're not going to be able to find the net figure,
7 the surplus deficiency kind of figure, because we don't have
8 resources on the old 21-B; but we can look at load. Is
9 December always your peak?

10 A No.

11 Q When you use December peak on Exhibit 21-B, is that not
12 necessarily the peak that would show on the revised edition
13 of 21-B?

14 A 21-B revised does use December peak.

15 Q Okay, it doesn't say December peak, but you do, in fact, use
16 it?

17 A Yes. The peak of our system could be in January and very often
18 is.

19 Q In the West Group Analysis, do you regard your peak as January
20 or December, or do you tell them one way or the other?

21 A The West Group Analysis requires the use of a January peak.
22 For consistency reasons, all utilities use the same month;
23 otherwise you would have a non-coincidental peak if some
24 utilities use December and some use January.

25 Q Just looking at the loads, because that's the only comparative
26 data that we have from the two sets of exhibits that you
27 submitted, I take it as a fair statement with which you would
28 agree, that from 1975 through 1986, your load now on the new

1 revised edition, 21-B, are reduced?

2 A Slightly.

3 Q You previously, on 21-B, had indicated total additional
4 resources required, and that was 4300 megawatts; was it not?

5 A Yes.

6 Q That was notwithstanding the fact that your total load growth
7 as then postulated was some 2862 megawatts, you now postulate
8 a total load growth that is 83 megawatts lower?

9 A Yes.

10 Q And yet, your total additional resources required is 119 mega-
11 watts less than you previously indicated?

12 A Yes.

13 Q What happened in those 8 months to make the picture look a
14 little rosier?

15 A Well, there's a slight difference in the withdrawal contract
16 terminations and the reserve number is adjusted; but the end
17 result is substantially the same.

18 Q What did you do to effect the lower withdrawal; did you do
19 some hard-headed negotiations?

20 A No, I think the difference was between the actual notices that
21 we have received since from some of the PUD's that reduced the
22 firm contract purchases on lines 5 and 11 so that we had to
23 reduce the remainder, which was subject to potential withdrawals.
24 These contracts have one to three years notice possibilities,
25 and it is impossible to replace a resource in that short of a
26 period. But we are faced with the loss of contracts on one
27 3-year's notice, five years in the case of Bonneville.

28 Q You say, "you are faced with," that means you'll have to re-

1 negotiate if you want to keep those contracts?

2 A Yes, and we have attempted renegotiation on some of the mid-
3 Columbia contracts and have been unsuccessful to date; in fact,
4 we've had absolute refusals.

5 Q Are you taking those for the last answer or are you still
6 working on it?

7 A We're still working on it. The only compromise suggested was
8 if they didn't require it in the future, they might give us
9 one year withdrawal availabilities; and that's poor resource
10 planning.

11 Q When would that one year start?

12 A Indefinite time in the future when they agreed to let us have
13 the resource. In other words, if public agencies are able to get
14 the power from Bonneville, they'll let us have their higher
15 cost resources on a one-year fallback basis.

16 Q So they have a priority, don't they?

17 A They have a preference with Bonneville Power Administration.

18 Q Now, if you'll look at Exhibit 21-A with me, Mr. Lisbakken, the
19 original edition and the revised edition?

20 A Yes, sir.

21 Q The first change that I wanted to ask you about is on the
22 Trojan nuclear plant, in some 6 days more than 8 months, you
23 determined that the output rating would be some 86 megawatts
24 less; how did that happen?

25 A There's only a difference -- the original 21-A column is
26 headed "name-plate rating"; the revised 21-A is entitled "out-
27 put rating." The output rating of 1130 megawatts is what
28 Portland General Electric, the sponsor of the project, says

1 its peaking capability will be available to us. Our 2½ percent
2 is based on the output rating, not the name-plate rating.

3 Q There is one other change besides the little squiggles between
4 name-plate and output, and that's the total deletion of PP&L
5 coal number one, which appeared on your original Exhibit 21-A
6 and no longer appears on Exhibit 21-A; what happened to that?

7 A It does not have a definite site location; it does not have a
8 definite permit application; it is indefinite.

9 Q Are you indefinitely planning to have something on line at that
10 time?

11 A I expect we will have something on line by that time, but I'm
12 unable to identify it as to location or size.

13 Q The fact is that you have considered a wide range of possibi-
14 lities for your own coal-fired plant at a number of different
15 sites and fueled by a number of different coal sources; isn't
16 that correct?

17 A Yes.

18 Q We'll get to some of those later. This last year, Mr. Lisbakken,
19 was a record capital expenditure year for Pacific Power and
20 Light Company, wasn't it?

21 A Yes.

22 Q Your largest expenditure was on the Jim Bridger 500-megawatt
23 unit that you are constructing; but you also had a rather sub-
24 stantial cost on an existing unit called the Dave Johnson
25 Plant near Glenrock, Wyoming; what was that for?

26 A Adding precipitators to the first three units at Dave Johnson
27 Plant.

28 Q And that cost \$37,000,000; didn't it?

1 A I believe that figure is about right; it's nearly doubling the
2 cost of the plant.

3 Q How old is that Dave Johnson Plant?

4 A The first unit, as I recall, went in about 1958; subsequent
5 units at two and four-year intervals.

6 Q Now, additionally, in 1975, you spent some 5.3 million dollars
7 to build a 500 KV line from South Central Idaho to an area
8 near Medford, Oregon; did you not?

9 A Well, we haven't built the line as yet.

10 Q That's budgeted, isn't it?

11 A Yes.

12 Q You also have budgeted \$6 million for geothermal and coal re-
13 search; right?

14 A Yes.

15 Q What kind of geothermal research are you doing?

16 A Doing some joint exploration with the Weyerhaeuser Company
17 and Southern Oregon.

18 Q Exploring for geothermal resources?

19 A Yes, drilling.

20 Q What kind of coal research are you doing?

21 A Well, I'm not sure I can describe all the coal research. We
22 have, at various times, looked at gasification possibilities.

23 Q Gasification of coal?

24 A Yes.

25 Q Is Pacific in the gas business?

26 A No.

27 Q Why do you want to gasify the coal?

28 A I didn't say we did.

1 Q Oh, why are you looking into it?

2 A It's one of the research projects, as I understand it; I am
3 not in the research side of the business.

4 Q As a power planner, would it be of some assistance to you if
5 the research on coal gasification showed that that were a
6 way to achieve higher thermal energy efficiency?

7 A Yes, if it would produce cheaper power than direct combustion
8 of coal, I would be interested.

9 Q And if you were to achieve higher thermal energy efficiencies,
10 then you would be able to have a greater output from the same
11 amount of coal going into a plant, wouldn't you?

12 A If the overall efficiency from the coal to the kilowatt hour
13 is the thing that counts and its cost.

14 Q Are you familiar, Mr. Lisbakken, with some load studies that
15 have been developed in the years 1958 and 1972 by engineering
16 firms hired by the Pacific Power and Light Company?

17 A I don't recall specifically; did you say load studies?

18 Q Yes, sir. I know that from time to time you've wandered into
19 the Montana country other than in the vain hope that you could
20 have testified at some earlier stage of these proceedings,
21 because you have been involved from time to time in some rate
22 proceedings here in Montana; have you not?

23 A Yes.

24 Q There is a rate proceeding on right now involving your sister
25 applicant, the Montana Power Company; and just last week, in
26 testimony before the Public Service Commission, there was a
27 reference made to Mr. Richard H. Pierce as a witness who had
28 appeared on behalf of the Montana Power Company; do you know

1 him?

2 A No.

3 Q The reference made was to testimony that he had given in
4 reliance on load studies developed in 1958 and 1972 by two
5 engineering firms by the Pacific Power and Light Company; you
6 don't know anything about that?

7 A No, what is the engineering firm?

8 Q Unfortunately, they don't name them in the article that I
9 have; but those load studies were criticized by a witness who
10 appeared from University of Montana and testified as an expert
11 consultant for the Public Service Commission staff. You don't
12 know what those studies might have been that were criticized?

13 A No, I am not familiar with them.

14 Q The basis of the criticism, as I understand it, Mr. Lisbakken,
15 was that the studies were irrelevant to the current load
16 situation of Montana Power. Would you agree that studies
17 prepared in 1958 and 1972 for the Pacific Power and Light
18 Company would be irrelevant to studies prepared for the Montana
19 Power Company?

20 MR. BELLINGHAM: We object on the grounds that
21 improper foundation has been laid; it's incompetent and
22 immaterial, and has no appropriative values as far as
23 this hearing is concerned.

24 HEARINGS EXAMINER: He can answer if he'll agree;
25 you're not overruled.

26 A I see no connection between our studies and Montana Power
27 Company's.

28 Q Let me go back to the geothermal studies in which you are

1 engaged right now; you tell me you're doing that in connection
2 with the Weyerhaeuser Company. Are you aware of the study
3 that was commissioned by the Electric Power Research Institute
4 to do the geothermal subsurface exploration in the Klamath
5 Falls area?

6 A No, I do not.

7 Q Do you know Bob French?

8 A I know a Bob French who is a neighbor of mine in Portland,
9 but I doubt that it's the same one.

10 Q There's a Bob French who is a FP&L Medford representative.

11 A That is a new --

12 Q He's a PR man?

13 A Yes, right.

14 Q And Bob French pointed out that PP&L, of course, is a con-
15 tributor to the Electrical Power Research Institute; isn't it?

16 A Yes, and EPRI is making geothermal research studies, but I am
17 not aware of their specific studies in Southern Oregon.

18 Q Do you know William L. Scholtes -- S-c-h-o-l-t-e-s?

19 A He's one of our district managers.

20 Q Yes, he's the manager of the Pacific Power and Light Company
21 in Klamath Falls, Oregon?

22 A Yes.

23 Q Would you agree with his statement that when the geothermal
24 site is selected, the EPRI would expect participating utilities
25 to be in operation by 1980?

26 A Well, I can't agree that they are going to have a geothermal
27 plant that early. I'm not sure whether it's explained there,
28 but my understanding of that research work that we are doing

1 with Weyerhaeuser is solely limited to exploratory holes for
2 temperature gradient studies only, and they are not to
3 develop geothermal wells. They are experimentally determining
4 the temperature gradient in deep drilled holes of a small
5 diameter.

6 Q There are geyser fields in Northern California today supplying
7 electricity; isn't that true?

8 A Yes.

9 Q About how many megawatts?

10 A Oh, it started out as fairly small a number of years ago
11 and it gradually built up; I don't know.

12 Q It's about 500 megawatts now, isn't it?

13 A I'm not aware that they have 500 megawatts in operation today;
14 they may have it under construction.

15 Q According to your Mr. Scholtes, the geyser fields in Northern
16 California supply about 500 megawatts of electricity, roughly
17 equivalent to the power needs of a city of a half a million;
18 I guess he's closer in geographic proximity than you are; isn't
19 he?

20 A He is.

21 Q Would you agree with his statement that industry predictions
22 are that the utilization of our country's geothermal resources
23 could triple every five years to reach between 20,000 to
24 100,000 megawatts of electric power by the year 2000?

25 A That sounds like a PR man's argument.

26 Q Do you have a PR man as the manager of your Klamath Falls
27 office?

28 A I don't know the source of his information. I also do know --

1 I did hear that Gulf was drilling in the same general area for
2 a geothermal exploration and they found a negative temperature
3 gradient, which they had not expected. They have abandoned
4 their drilling.

5 Q Do you know Bud Prince?

6 A Yes.

7 Q Is he another PR man?

8 A He's got some engineering background.

9 Q That makes him a good, solid citizen. He's the PP&L repre-
10 sentative in Sunnyside, Washington, isn't he?

11 A Various places.

12 Q How is your planning coming along with the construction of
13 the nuclear power plant at Roosevelt, Washington?

14 A They have submitted to the Washington State Siting Council,
15 as I understand it, a request that the site be reviewed for
16 nuclear or coal; there has been no permit application made,
17 from my understanding.

18 Q I don't see that Roosevelt, Washington site on your resources
19 on Exhibit 21-A; is that correct?

20 A That's correct; it is not on there. It is a potential site
21 that we have an option on to develop in the future, along
22 with other sites.

23 Q You've taken an option on more than 5,000 acres of ground at
24 Roosevelt; haven't you?

25 A Yes.

26 Q You're also planning, and have been for some time, the possi-
27 bility of building, in addition to the nuclear plant at
28 Roosevelt, Washington, a coal-fired facility there too; isn't

1 that true?

2 A That is one of the possibilities of a coal-fired plant there,
3 yes.

4 Q Where would you get the coal from?

5 A Wyoming or Montana.

6 Q You, of course, own a lot of coal in Montana yourselves;
7 don't you?

8 A Yes.

9 Q Through a wholly owned subsidiary such as Decker?

10 A Some of it is through a subsidiary; some of it directly owned.

11 Q When you formally announced, in May of 1975, that you were
12 considering a coal-fired power plant near Roosevelt, Washington,
13 you then said, did you not, that you were considering using
14 your own coal reserves in Wyoming for that plant?

15 A Yes.

16 Q What's the megawattage that you're looking at in West Roosevelt,
17 Washington for your nuclear plants, or coal plants?

18 A I honestly don't know, obviously, all sites and we are looking
19 at other alternate sites as well in Oregon, and in Wyoming; and
20 the size of those is dependant on the available land, the water,
21 the siting authorities for acceptance of air quality require-
22 ments. I don't know the actual --

23 Q The fact of the matter is, Mr. Lisbakken, that what you asked
24 of the Washington Thermal Energy Council, or its equivalent,
25 whatever they call their council in Washington, was for a
26 study to determine whether the thermal plant park site at
27 Roosevelt, Washington, could support a cluster of six nuclear
28 plants and four coal plants of 1,000+ megawatt size each; isn't

1 that true?

2 A That may have been the request, yes.

3 Q That sort of sounds like 10,000 megawatts plus; doesn't it?

4 A Yes.

5 Q If you build half those plants, you'll solve all your surplus

6 deficiency problems; won't you?

7 A I doubt that we get to build that many on that location.

8 Q If you built half of them, you would solve all your deficiency

9 problems, wouldn't you?

10 A That depends on the time that they're built; you don't build

11 them overnight.

12 Q Well, sir, you do project, now, an energy deficiency of 284

13 megawatts in 1985-86, and you project a peak deficiency of

14 840 megawatts in 1985-86; that sounds to me like one of those

15 10 plants in 9 years; you could do that, couldn't you?

16 A Not as a nuclear plant.

17 Q As a coal-fired plant you could, couldn't you?

18 A Possibly.

19 Q Now, when your deposition was taken last year, Mr. Lisbakken,

20 it was then your intention on behalf of Pacific to bring on

21 line some 1519 megawatts between 1975 and 1980; you've revised

22 that upwards by 150 megawatts, or have you revised it downward?

23 A Between now and 1980, there should be not too much difference.

24 We've got about 1400 megawatts on Exhibit 21-A between now and

25 1980.

26 Q As I look at your resources, Mr. Lisbakken, on Exhibit 21-B,

27 don't you now show 2082 megawatts of average energy?

28 A Are you taking the difference between 7506 and 8506?

1 Q No, the current year, 1975-76, your total resources were 2082
2 average energy megawatts, right?

3 A Yes.

4 Q And in 1980 you now project you're going to have 2733, is that
5 correct?

6 A Yes.

7 Q That sounds to me like something less than 700 megawatts of
8 average energy over that period of time?

9 A Yes.

10 Q If you go up to the peak column, your total resources now are
11 4,361 megawatts for this current year; and in 1980, 5,523
12 megawatts, or something less than 1200 additional megawatts?

13 A Right.

14 Q So since the time your deposition last was taken, you've re-
15 vised your estimate as to the number of megawatts that you are
16 going to bring onstream, whether you're referring to energy
17 or peak; isn't that true?

18 A Yes.

19 Q Why did you do that?

20 A Well, many of those resources are being constructed by others,
21 and also there have been changes in the purchase agreements.
22 The net is the current figure; there have been no new resources
23 added; it's only the change or the slippage in those programmed
24 resources, or a change in purchase agreements.

25 Q Well, another reason why you're not bringing in all that mega-
26 wattage that you thought you would less than a year ago, is
27 that your load growth is down some; isn't that right?

28 A The load forecast is down; that does not mean that the load

1 will be down.

2 Q Well, the forecast on which you do your planning shows that
3 the load will be down; right?

4 A Yes.

5 Q Okay. And you certainly can see the likelihood that your plan-
6 ning is accurate; is that not true?

7 A We attempt to forecast as accurately as we can.

8 Q Another reason why you might have a diminished load growth as
9 you look at it today and project into the future, is that the
10 economic conditions in which we find ourselves today are dif-
11 ferent than where they were a couple-three years ago; isn't
12 that correct?

13 A Yes.

14 Q And that, of course, has a heavy bearing upon any load pro-
15 jections that you would make?

16 A I have the same concern that Mr. Goldhammer has, that our
17 forecasts may be too low.

18 Q I can understand your having that concern, Mr. Lisbakken,
19 because you're the fellow who has to provide the resources for
20 the actual load, not the forecasted load; isn't that right?

21 A Right.

22 Q Now, taking a look at the cost of this Colstrip project, in
23 which the Pacific Power and Light Company is participating,
24 your chairman of the board, again, had estimated it at \$500
25 per kilowatt; do you remember that?

26 A Yes.

27 Q That would be \$700 million for the power generation, exclusive
28 of the transmission?

1 A Yes.

2 Q And your senior vice-president, Mr. G. Eldon Drennan, who was
3 heavily involved on the Colstrip project, agrees with that
4 estimate as well; do you?

5 A Well, I'm not directly involved in the cost estimating;
6 however, when I find that's the right order of magnitude as we
7 are reporting in our current reports.

8 Q Would you also agree with the estimate shared by Mr. Frisbee
9 and Mr. Drennan that the total cost of the 500 KV transmission
10 line as of last year when the depositions were taken, was
11 \$200 million?

12 A I'll accept that.

13 Q Okay. When Pacific first got into the Colstrip project; it
14 was, of course, the last of the participants to join; was it
15 not?

16 A Yes.

17 Q And at the very beginning of the Colstrip project, within a
18 month after the application was filed, you knew, did you not,
19 that the front end of the schedule was very tight?

20 A Yes.

21 Q So it came as no surprise to you, as a power planner for
22 Pacific, to learn that the original 1978 schedule would not
23 be met; right?

24 A No, I didn't know that. Even a tight schedule can be met if
25 a project is maintained on schedule.

26 Q Did you really plan on having Colstrip unit 3 available to you
27 in July of 1978?

28 A I was certainly hoping, at that time, that it would be on.

1 Q Well, there are hopes and expectations and plans; what was
2 your plan?

3 A Well, it depends on the point in time you're talking about.
4 We have always accepted the date of completion of the project
5 as reported by the constructor, Montana Power Company.

6 Q About a year ago, Mr. Lisbakken, Eldon Drennan, as the then
7 senior vice-president for Pacific Power and Light Company,
8 had advised Mr. F. H. Dahl -- D-a-h-l -- of the Bechtel Power
9 Corporation, that the Montana -- what he described as Public
10 Utility Commission, it is actually the Public Service Com-
11 mission -- had voted 5 to nothing that the Montana Power
12 Company had sufficient power reserves without the addition
13 of Colstrip units 3 and 4; did Mr. Drennan tell you about that
14 too?

15 A No, I don't recall that.

16 Q Did you ever find out about that?

17 A I don't recall it in that sense, no.

18 Q Would that be a relevant piece of information for you to obtain?

19 A Yes, in terms of our own planning; yes.

20 Q Haven't you reviewed Mr. Drennan's deposition?

21 A I'm sorry to say I didn't.

22 Q My man spoke very well in his deposition. Did you know that
23 Mr. Drennan, last year, was very pessimistic about the time
24 frame of the then construction schedule for the Colstrip units
25 3 and 4?

26 A Well, of course, last year was a lot later than the time we
27 originally got into it when we started the planning.

28 Q Yes, a year and a half later. Did you know last year that the

1 then schedule, which was officially announced as 1979 for
2 Colstrip 3, and 1980 for Colstrip 4, was one that could be
3 met only with great difficulty; if at all?

4 A Well, we had -- I had to accept it as programmed, that the
5 constructing, sponsoring company could complete it.

6 Q Well, Mr. Drennan, at least as of May of 1975, was the
7 person at Pacific Power and Light Company then chiefly respon-
8 sible for Pacific's participation in the Colstrip project;
9 was it not?

10 A Yes.

11 Q And did he not tell you that at that time he thought it would
12 be very tight to complete unit 3 anytime in the calendar year
13 1979?

14 A Well, he may have said that it would be tight, but most con-
15 struction schedules are tight.

16 Q And the tighter they are, the less likely they're met?

17 A Not necessarily.

18 Q Would you agree with Mr. Drennan's estimate that the West
19 Group milestone schedule for coal-fired thermal plants was
20 reasonable?

21 A There are many variations in the application of the milestone
22 approach.

23 Q Whatever those variations might be, do you think the statement
24 of the milestones in the West Group Forecast was reasonable?

25 A Yes.

26 Q Who's Phil Humphreys?

27 A He's in charge of construction of our thermal plants.

28 Q Did he tell you that he first determined for himself that the

1 Colstrip unit 3 would not go onstream in 1978 as originally
2 scheduled, by the fall of 1974?

3 A Well, I think by the fall of 1974 we were -- we knew it was
4 a tight schedule. I don't recall specifically him telling me
5 not to expect it.

6 Q Did Mr. Humphreys have some responsibilities in Pacific's
7 shops who were looking at the air pollution concerns of the
8 Colstrip project?

9 A Well, I can't say specifically, but he was to follow the
10 project on behalf of Pacific. What he looked at, I am not
11 aware of.

12 Q Have you reviewed his deposition?

13 A No.

14 Q Would you have any basis for disagreeing with his assumptions
15 that sulfur content for the Colstrip coal would be at 1.25
16 percent?

17 A I have no reason to agree or disagree.

18 Q You would have some reason to agree, wouldn't you; you trust
19 his judgment, don't you?

20 A I trust his judgment; yes, sir.

21 Q You don't think that I'm misstating the figure?

22 A No, sir.

23 Q Did you have any role in the Pacific Power and Light Company,
24 Mr. Lisbakken, in looking at the environmental effects of
25 500 KV power lines, transmission lines?

26 A Not directly, no.

27 Q Do you know Alvin Alexanderson?

28 A Yes.

1 Q Who is he?

2 A I believe he is one of the deputy attorneys from the State of

3 Oregon Attorney General's office, representing the Oregon

4 Public Utilities Commission.

5 Q And who is Elwood B. Hedgard?

6 A He is a vice-president for Pacific in charge of engineering

7 and operations.

8 Q Would Mr. Hedgard have something of expertize to bear on the

9 subject of what transmission line effects there might be from

10 the 500 KV lines?

11 A Yes.

12 Q Who is A. H. Seekamps?

13 A He is one of the engineers in Mr. Humphreys department, a

14 mechanical engineer, I believe, responsible for the construc-

15 tion of some of our thermal plants.

16 Q Does he have some expertize on the subject of flue gas emissions

17 for coal systems?

18 A He, I think, is well informed on it; yes.

19 Q Would you have any reason to disagree with his statement to

20 Mr. P. G. Humphreys on August 23rd, 1974, in your internal

21 correspondence, that he recommended with respect to the

22 scrubber units for the Colstrip units 3 and 4; first, that we

23 try to get a final decision delayed until sufficient operating

24 experience is obtained with the CEA scrubbers on Colstrip

25 units 1 and 2 to insure their reliability; any reason to

26 disagree with that?

27 A No.

28 Q Secondly, that sufficient space be included in the duct work

1 ahead of the scrubbers, and the scrubbers be designed for
2 service as absorbers in the event particulate removal is found
3 to be necessary at a later date; any reason to disagree with
4 that?

5 A I have no reason to agree or disagree. I have no expertize
6 in that.

7 Q But you have a reason to agree because you respect the judg-
8 ment of Mr. Humphreys and Mr. Seekamps; isn't that right?

9 A I don't know whether Mr. Humphreys agreed with Mr. Seekamps
10 is what I don't know.

11 Q Would you have a reason to disagree with Mr. Seekamps without
12 knowing whether Mr. Humphreys agreed or disagreed?

13 A Well, there are obviously many ways for an engineer to review
14 a system -- to review an air quality system.

15 Q If I were you tell you, Mr. Lisbakken, that there is already
16 an exhibit in the earlier proceeding before the Board of Health
17 in Montana in which Mr. Humphreys expressed these same views
18 a few days after receiving the memorandum from Mr. Seekamps,
19 and Mr. Humphreys relayed his suggestions to representatives
20 of the Montana Power Company; would that help you in deter-
21 mining whether you should have no basis to agree or disagree?

22 A If Mr. Humphreys recommends it, I would accept that.

23 Q Okay.

24 HEARINGS EXAMINER: Are you ready for a short recess,
25 or would you rather proceed? Alright, let's be back
26 about 20 after or so. Can we finish this witness this
27 afternoon?

28 MR. SHENKER: I'm sure we can. It might be helpful

1 to knock about 5 minutes off that recess, Carl.

2 HEARINGS EXAMINER: Alright, let's take 10 minutes,
3 then.

4 MR. SHENKER: Okay.

5 (Recess: 3:05)

1 Following a brief recess, the hearing reconvened at 3:20 P.M.
2 on January 23, 1976.

3 HEARINGS EXAMINER: Go ahead, Mr. Shenker.

4
5 CONTINUATION OF EXAMINATION OF R.B. LISBAKKEN

6 Cross, by Department of Natural Resources and Conservation

7 By Mr. Shenker (continuing):

8 Q At one time, Mr. Lisbakken, PP&L was considering an oxidized
9 coal proposal. Do you know what that was?

10 A I don't think I do. How long ago was that? Is that the
11 fertilizer operation that was investigated back in the early
12 sixties?

13 Q August 10th, 1971, a presentation to the Northwest Utilities
14 Group especially prepared for PP&L by Kaiser Resources,
15 Limited.

16 A I am not familiar with it.

17 Q Have you heard of an Elkview preparation plant for by-product
18 coal?

19 A No.

20 Q You've never heard of PPL's investigation of a by-product
21 from KRL's new preparation plant, containing forty percent
22 ash?

23 A No.

24 Q Have you considered the location of a proposed power plant
25 at Eureka, Montana?

26 A Some years ago we did, using Crow's Nest coal. That was a
27 Kaiser Midling's coal in British Columbia that Kaiser was
28 trying to find a market for, and it was looked at but there

1 to knock about 5 minutes off that recess, Carl.

2 HEARINGS EXAMINER: Alright, let's take 10 minutes,
3 then.

4 MR. SHENKER: Okay.

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25 at Eureka, Montana?

26 A Some years ago we did, using Crow's Nest coal. That was a
27 Kaiser Midling's coal in British Columbia that Kaiser was
28 trying to find a market for, and it was looked at but there

1 was no railroad to get it down into the United States and it
2 took some time before they thought they might be able to
3 build one, and by that time the Energy Board had said no
4 export of energy from Canada.

5 Q Do you recall the proposal requiring the building of addi-
6 tional rail service?

7 A Well, there was discussion of building the railroad from the
8 Crow's Nest area to connect to Canadian Pacific or the --
9 whatever the Canadian railroad was, I don't recall --

10 Q Canadian Pacific.

11 A Canadian Pacific -- to interconnect with the Northern Pacific.
12 But that never came to pass. It was not one site location,
13 they were looking at a number of Washington and Montana
14 locations.

15 Q Right. Who was going to be the project sponsor for those
16 considerations of site?

17 A I don't recall that there was any sponsor selected. It was
18 an investigation by all the utilities to see if there was a
19 possibility of a project, but I don't recall any sponsor.

20 Q Has the Pacific Power and Light Company been involved in
21 research or discussions on the transmission of coal by slurry
22 pipeline?

23 A Possibly. I haven't had any contact to know specifically of
24 any of the studies.

25 Q Have you heard of Mr. Einar Greve?

26 A Yes.

27 Q Who is he?

28 A I believe he's a vice president of the Tucson Gas and Electric,

1 I think.

2 Q What contact had you had with him before he went down to
3 Tucson?

4 A He was a transmission electrical engineer with one of the
5 consulting firms, the name of which slips me at the moment.

6 Q Charles T. Main?

7 A All right. I'll accept that.

8 Q In doing your power planning, Mr. Lisbakken, you have to
9 consider, do you not, not only the potential site that might
10 be available to take a generating station, with sufficient
11 water if you need water, with also the availability of coal
12 and the means by which the coal is delivered to the gener-
13 ating station?

14 A Yes.

15 Q Is it your testimony that you have not considered the delivery
16 of coal by slurry pipeline to a generating station?

17 A I didn't -- I haven't made such studies. Undoubtedly the
18 engineering department may have looked at such studies.

19 Q Do you know whether the conveying of coal by slurry pipeline
20 to a generating station hundreds of miles from the mine site
21 has been studied and concluded to be competitive with the
22 transmission of coal by rail to a generating station?

23 A I have not seen numbers to that effect. There are some
24 plants operating, but they're not a thousand miles away as
25 Oregon-Montana would be.

26 Q How about from Wyoming to Texas?

27 A I have seen no studies, and we, I'm sure, have not looked at
28 studies with respect to power plants in Texas.

1 Q Does the Pacific Power and Light Company own coal in Wyoming
2 through subsidiaries?

3 A Yes.

4 Q Or directly?

5 A Yes.

6 Q Do you know whether the Pacific Power and Light Company
7 directly or through its subsidiaries has looked at the
8 delivery of its Wyoming coal, or its Montana coal for that
9 matter, by slurry pipeline?

10 A I do not know.

11 Q Who inside the PP&L organization would know about such
12 things?

13 A Mr. Davenport has responsibility for the coal mines and the
14 operation of the coal mines. The present shipments out of
15 Decker are made FOB at the plants, so I don't know whether
16 he would -- why he would be looking at a pipeline when he can
17 sell it at the mine mouth.

18 Q You were here today, were you not, Mr. Lisbakken, while
19 Mr. Goldhammer was testifying?

20 A During portions of it.

21 Q Do you recall his description of the FEA study which Mr.
22 Bellingham asked him about, to describe the reasons for the
23 deferral of coal-fired power generating stations around the
24 country?

25 A I don't recall that I heard that portion of the testimony.

26 Q The Pacific Power and Light Company decided to slow down the
27 construction schedule for one of your Jim Bridger units, isn't
28 that true?

1 A Yes.

2 Q There were three reasons for that slowdown -- I misspoke
3 myself, I said one of your Jim Bridger units, it should have
4 been Jim Bridger units 3 and 4, right?

5 A Unit 2 was also deferred.

6 Q Ah, 2, 3 and 4?

7 A Yes.

8 Q All right. The three reasons for the slowdown of the
9 Bridger units 2, 3 and 4 were: first, the load decline,
10 second, a change in availability of manpower -- I assume
11 that's construction manpower -- and, third, concern over the
12 ability of the company to do all the financing required in
13 a shorter span of years. That would be correct, would it
14 not?

15 MR. BELLINGHAM: Excuse me, but are these reasons
16 attributed to testimony previously appearing in this
17 case?

18 MR. SHENKER: We'll find out. I'm asking him now.

19 MR. BELLINGHAM: Well, you're not assuming the
20 question is based on previous testimony, or testimony
21 this morning? I didn't hear then.

22 MR. SHENKER: No, I didn't hypothesize them, Bill.

23 MR. BELLINGHAM: That's what I was wondering.

24 MR. SHENKER: I'm just asking him if he would
25 agree those are three reasons.

26 A Well, I don't know the financing itself was a reason for the
27 deferral. If we didn't have the load, we could defer the
28 units, and if their costs or their manpower costs were going

1 out of range, it's good reason to review the schedule.

2 And, in fact, the unit was delayed in an attempt to save
3 money and it came in early on unit 2.

4 Q A summary of the factors of the reasons for deferring the
5 Jim Bridger units would be, would they not, a lower base on
6 the load forecasting, the necessity for a more sensible
7 manpower allocation, and, thirdly, the financing of the load
8 on the company -- or the financing load on the company?

9 A Well, obviously the financing load is affected by the manpower
10 cost effect.

11 Q Of course, if you can draw out the construction over a
12 longer period of time, the financing burden is less?

13 A Right.

14 Q So would you agree with those three reasons, then, sir?

15 A Well, those are three reasons, yes.

16 Q For the deferral of your Jim Bridger units?

17 A Yes. Some of them are causes and some of them are effects.

18 Q When the Colstrip project was commenced and Pacific began
19 to participate in it, the original schedule, of course, was
20 for on-stream 1978-1979, but at that time your load projec-
21 tions were also higher than they are now, isn't that true?

22 A Yes.

23 Q Would you agree that the slippage of the schedule for the
24 Colstrip project pretty well balances with the modification
25 in your load growth projections?

26 A Well, there have been other slippages and changes in purchase
27 contracts also. The Colstrip alone is not the only change.

28 Q I understand that, sir, but would you still agree with my

1 statement to you?

2 A If you're saying that the magnitude of load change -- are
3 you speaking on an energy or a peak basis?

4 Q Capacity on line.

5 A Well, 1980-81 the capacity difference between our prior
6 forecast and our present forecast is thirty four megawatts.
7 In that year we're expecting seventy megawatts of capacity
8 from Colstrip number 3. In the next year we're expecting
9 a hundred and forty megawatts and the load difference is
10 only thirty seven megawatts.

11 Q Well, do you think that the modification in load growth
12 projections and the slippage of the Colstrip schedule are
13 not relatively in balance?

14 A They are not in balance, no.

15 Q Well, it looks like it's one for three now, Mr. Lisbakken.
16 Were you there when Mr. Frisbee testified that that was his
17 view?

18 A I don't know that that was his view.

19 Q Take a look at his deposition which you have before you,
20 page 62, line 9. He said, what we are trying to do is match
21 projected load growth with new resources so that not only are
22 we able to have enough capacity on the line as load growth
23 continues to occur, but also sufficient reserves to take
24 care of emergencies and delays, et cetera. The Colstrip
25 project was originally scheduled for 1978-1979, and matched
26 the projections that were being used at that time. Now,
27 with the slippage and some modifications in load growth
28 projections, the two are relatively in balance. Do you

1 disagree with the chairman of the board this time around?

2 A Well, I don't disagree with his statement as of that time,
3 but it is not necessarily the same figures today.

4 Q Well, let's take a look at your revised -- your previously
5 submitted exhibit, 21-B, then, and see if that squares with
6 Mr. Frisbee's statement.

7 A His statement was not with 21-B in front of him.

8 Q I think that's probably true, because 21-B was dated
9 April 11th, 1975, and Mr. Frisbee's testimony was a month
10 earlier, March 4th, 1975. Now the balance didn't get out
11 of balance in one month, did it?

12 A Well, revisions in load and resources are continually being
13 made and I can't tie exactly to the resource table that
14 Mr. Frisbee was looking at at the time he made that. What
15 he was saying was that we were satisfied with the schedule
16 at that time, with the resource schedule at that time, and
17 they were in balance at the time he looked at them.

18 Q Well, the fact of the matter is, Mr. Lisbakken, that despite
19 what you've submitted as a resource schedule on Exhibit 21-B,
20 you have actively under consideration right now, a number of
21 additional generating resources, is that not true?

22 A Not that can be in by 1980.

23 Q How about 1985?

24 A Possibly.

25 Q How about 1984?

26 A It depends on the site approval, on the environmental con-
27 siderations, local permits, a great many factors.

28 Q What's the experience with siting requirements in the State

1 of Idaho?

2 A We have not proposed any plants in the State of Idaho.

3 Q Do they have a siting act in Idaho?

4 A There may be. I am not familiar with it.

5 Q As a matter of fact, Mr. Lisbakken, you have, for power
6 planning purposes, studied a number of projects, and to aid
7 you in your study of them, you number them: Project 1, 2 ,3
8 4, 5, as you take a look at them. Isn't that right?

9 A The numbering obviously changes also.

10 Q Project number 1, revised, June 20th, 1973, was Midway
11 Station at Midpoint Sub-station, halfway between Boise and
12 Pocatello, Idaho, near Jerome, Idaho, a five hundred megawatt
13 unit fueled by Decker coal. Ownership: Pacific Power and
14 Light Company, fifty percent; Idaho Power Company, fifty
15 percent. Do you recall that one now?

16 A Was that a transmission study or a generating study, a
17 resource study? I don't recall the study by that number.

18 Q Let's take project number 28. Project name: American Falls.
19 Location: American Falls, Idaho, thirty miles west and ten
20 miles south of Pocatello, three five hundred megawatt units.
21 Fuel: Cherokee coal. Ownership: Pacific Power and Light
22 Company, one-third; Idaho Power Company, two-thirds. Do you
23 recall that one now?

24 A That was -- there were some studies made, but not in great
25 detail. I suspect those are transmission studies of alter-
26 natives of generation and transmission.

27 Q How about project number 29? Project name: Mountain Home.
28 Location: Mountain Home, Idaho, forty miles east and fifty

1 miles south of Boise. Size: three five hundred megawatt
2 units. Fuel: Cherokee coal. Ownership: one-third PP&L,
3 two-thirds Idaho Power. Do you recall that one?

4 A Those may have been transmission studies which the engineers
5 are always making studies of. Potential possibilities. We
6 do not have any application for a permit to build a coal-
7 fired plant in the State of Idaho. I know a power company
8 does have an application pending for some five hundred
9 megawatt units. I am not familiar with the size or the
10 location, nor the source of coal, other than that I assume
11 they're going to import the coal from Utah or Wyoming. But
12 we are not a participant in that plant.

13 Q Well, Mr. Lisbakken, when the application was filed in this
14 very Colstrip proceeding on June 6th, 1973, you weren't then
15 a participant in this application either, were you?

16 A That's correct. Well, we were an applicant in late '73,
17 I believe.

18 Q Yes, sir. Your name appeared in the application, but your
19 agreement to participate came two months later, didn't it?

20 A Yes.

21 Q So there is nothing to stop you from joining the Idaho Power
22 Company, the Utah Power Company, or anybody else for that
23 matter, with any project that they have already applied for?
24 Isn't that right?

25 A I don't know the requirements of changing participation after
26 the permit is granted.

27 Q How about while the permit is pending?

28 A I, again, do not know the requirements. To my knowledge, we

1 are not considering at this time, participation in the Idaho
2 application.

3 Q Well, tell me, Mr. Lisbakken, of the several dozen studies
4 that you have produced for me, numbered by project number
5 for power planning, just how many units do you really think
6 you're going to build at Pacific Power and Light Company
7 over the next ten years in addition to those that appear on
8 the resource schedule that we have seen?

9 A We're going to build those that are needed, those that are
10 economic, and those that are the best -- that best fit the
11 power requirements and the area requirements. And you look
12 at a lot of alternatives and build very few of them.

13 Q Just enough to meet what you think you have to meet?

14 A Yes, sir.

15 Q That's fine.

16 MR. SHENKER: Thank you, Mr. Lisbakken. I have no
17 further questions at this time, and I have no objection
18 to the tendered Exhibit 21-B, revised, December 15, 1975,
19 nor to the current annual statement of the company.

20 HEARINGS EXAMINER: Thank you, Mr. Shenker.
21 Mr. Meloy, cross-examination?

22 MR. MELOY: Mr. Shenker quit so abruptly, Mr. Davis,
23 I've got to get my -- together.

24 HEARINGS EXAMINER: You can ask him what his name
25 is again.

26 MR. MELOY: I don't have very much, Mr. Davis,
27 maybe five or ten minutes is all.

28 HEARINGS EXAMINER: Very well. Whatever you need,

1 Mr. Meloy. I'm at your disposal.

2
3 Cross, By Northern Cheyenne Tribe, Inc.

4 By Mr. Meloy:

5 Q Mr. Lisbakken, has Pacific Power and Light made applications
6 for reservoir sites in the Tongue River Basin?

7 A I believe some of our engineers have been making water right
8 applications, is that your question?

9 Q Yes.

10 A Yes, I believe we have.

11 Q Why?

12 A The same as we're looking at a number of alternative site
13 locations, we are planning for future years for power plants
14 and power plants need water, even air-cooled plants need
15 makeup water.

16 Q One of the items among your list of planned, or at least in
17 your words, plants which your engineers may be looking at,
18 is project number 24, which is entitled: Project name:
19 Decker Station, near Sheridan, Wyoming. That indicates that
20 there could be two six hundreds -- I assume that means
21 megawatts -- using Tongue River water from Prairie Dog Creek.
22 Could those applications which your engineers have made in
23 the Tongue River Basin be connected with project number 24
24 as I have just recited it to you?

25 A I don't know. I'm not familiar with the study numbers that
26 you and Mr. Shenker have referred to and I haven't seen those
27 studies, so I really can't answer with respect to the specific
28 purpose of the water applications as they relate to the

1 plant site studies.

2 (MR. MELOY HANDS A DOCUMENT TO THE WITNESS.)

3 A Vice-president who was making studies of power plant alter-
4 natives.

5 Q Do you recognize the form upon which those project numbers
6 are listed as being those that Pacific Power and Light uses
7 in its power plant division?

8 A Well, they obviously are identified with Pacific Power and
9 Light Company, and they are the kind of thing that the
10 engineering department might look at, but I am not familiar
11 with them.

12 Q When do your engineers there, Mr. Lisbakken, think that you
13 could get that Decker two six hundreds on line, commercial?

14 A I have no knowledge of that.

15 Q Well, it says on the project chart midway down the page.
16 Would you read that please?

17 A It has been assumed, it says, and this is dated 19 June of
18 1973 --

19 Q That's about the time that you -- that the application was
20 made for 3 and 4?

21 A These are order of magnitude estimates of, apparently,
22 possible projects that have been looked at. And with respect
23 to Decker, it says, it has been assumed that Prairie Dog
24 Reservoir and pumping facilities for Tongue River water would
25 be developed for maximum yield, with the excess being avail-
26 able for future or other uses.

27 Q And your engineers have applied for reservoir sites in that
28 area?

1 A I am not aware of that in specifics. I have not seen the
2 water applications, I'm sorry. I am not familiar with the
3 specific applications and how they relate to these earlier
4 studies.

5 Q Are you telling me, then, Mr. Lisbakken, that in 1973,
6 regardless of that study you have in your hand, you would
7 not have been able to build two six hundred megawatt plants
8 at Decker, Wyoming? At Sheridan, or near Sheridan?

9 A Well I suspect that if we still, two and a half years later,
10 do not have water permits, that we don't know that we can
11 build a plant there yet.

12 Q If you got the water permits, then, I take it, you could
13 build the plants there, is that right?

14 A No, I think there's other steps in addition to water to
15 building a plant.

16 Q And, as the alternative, you chose Colstrip, is that right?

17 A As one of the resource additions we chose Colstrip for the
18 period of time it was coming in. I do not read that these
19 plants were considered as definite for any specific year.

20 Q Well, your engineers think they could be on line, what does
21 it say --

22 A Well, it says for the water resource, three years from '73,
23 which would put it into '76 before the water --

24 Q And then how many years of engineering and construction time?

25 A Well, they show spaces for twelve years, and a cash flow for
26 a period of eight years.

27 Q Well, doesn't it say something about commercial on there?
28 What does that mean?

1 A Well, let's see. All right, it says mid-1979 and mid-1980,
2 but I think they were dreaming at that time to expect to get
3 it in from '73 to '79 or '80. But that's what the engineer-
4 ing study shows their assumptions were, 1979 or '80.

5 Q Okay. Of all of the --

6 A These were not alternatives to Colstrip is my understanding.

7 Q Well, they were if they provided the power you need, or that
8 you would be getting from Colstrip. I mean, you're obviously
9 participating in Colstrip because, or at least you're telling
10 us that you need the power, and these would provide plenty
11 of power, any of the ones that Mr. Shenker cited to you, or
12 that one which you have in your hand. Mr. Lisbakken, do you
13 know why you decided against any of these alternatives that
14 your engineers proposed for you?

15 A I don't think they decided against them. I think they
16 decided that they did not need the entire --

17 Q They're still, then, in the picture? I think you answered
18 that question yes to Mr. Shenker, isn't that right?

19 A We are always looking at alternatives for the next site.

20 Q And if you got an alternative between now and the board
21 decision, you would most certainly add it to your Exhibit
22 21-A, would you not?

23 A Yes.

24 Q Because that would be very important for us to know, isn't
25 that right, in terms of your need?

26 A Well, I don't think we have an alternative coal site for
27 1980 or '81. That's possibly a development between now and
28 1981. I think now what we're looking for are coal plants

1 for the '84-'85 period.

2 Q Do you know who John S. Anderson is?

3 A Yes.

4 Q Who is he?

5 A Vice-president of Utah Power and Light Company.

6 Q And you know Mr. Anderson because, on page 8 of your state-
7 ment, you told us that your electric operations in Montana,
8 Oregon, Washington, California, and Wyoming are integrated
9 and operated as a single system. Transfers in either direction
10 between the different portions of the system are made through
11 wheeling arrangements with, among other people, Utah Power
12 and Light Company. Is that how you know Mr. Anderson?

13 A Yes, although I have known Mr. Anderson for a good many years
14 before we even had interconnections with Utah.

15 Q Does Mr. Anderson's resources, then, have any impact on your
16 resources?

17 A Well, not at the present time. We have participated in
18 staggered unit construction where we shared units, or
19 purchased from each other's units in the past, and we may
20 at some time in the future. We do not at this time have any
21 arrangements for participating in any Utah Power and Light
22 Company power plant.

23 Q Well, no, not participating as an owner, but participating
24 by way of receiving energy through transfers?

25 A Well, we have not purchased any firm power from any Utah
26 Power and Light specific plant.

27 Q Have you asked, in the past year, Mr. Anderson whether he
28 has any power available for sale?

1 A Yes.

2 Q You have? And what did he tell you?

3 A He had none.

4 Q Then, can you explain why he might have said that the
5 Knaughton plant, unit 4, at Kemmerer, Wyoming is being
6 postponed for three years due to a reduction in the estimated
7 amount of power neighboring utilities will purchase from
8 UP&L?

9 A Well, we are not one of the neighboring utilities that
10 offered to buy power from Knaughton number 4.

11 Q But you could purchase power from Utah Power and Light, who
12 in turn would get it from Knaughton number 4, could you not?

13 A Well, we could have if the plant were coming at the right
14 time to meet our requirements.

15 Q Well, the previously announced 4th unit was originally
16 planned for operation in 1979, but it's bumped up to 1982,
17 is that right?

18 A I'll accept that. I do not know what its present schedule
19 is.

20 Q That would have provided power had you talked with Mr.
21 Anderson about purchasing some of the Knaughton energy, which
22 could have come on line in '79, but wasn't because none of
23 the neighboring utilities were interested in it.

24 A Well, let me explain a little bit further that we have not
25 purchased from Utah Power and Light any firm power and one of
26 the reasons is that we wanted a firm power source for which
27 we had continuous use, not short-term use. Now, if Utah
28 Power and Light had offered us a percentage ownership in the

1 plant, we might have looked at it differently, but a short-
2 term sale is not the same as a long-term firm contract or a
3 long-term ownership position.

4 Q It might have gotten you through 'til you could have gotten
5 some of the other plants that you're thinking about on line,
6 though, could it not? On short-term sales, purchases from
7 Utah Power and Light?

8 A Well, if the participation were offered on a long-term
9 basis, as I say, we would be far more interested than in a
10 short-term basis; if, in fact it were available and we only
11 needed it on a short-term basis, we'd certainly consider it.

12 Q But if you were to build your own plant, then, you would only
13 need it on a short-term basis? Now, let's say, one of the
14 plants that you're continually planning?

15 A Well, but there are more things than just short-term pur-
16 chases involved. If I'm going to purchase from him, I need
17 a transmission system. If that transmission system is built
18 only for a short-term purpose of transmitting the power from
19 the Utah plant to my system, and then I end up building a
20 plant in a different location, then I have not made use of
21 the transmission system that I've had to build and invest in.
22 So, it depends on where my next plant is. If it's in Oregon,
23 a temporary purchase from Utah may require additional trans-
24 mission, so there's more than just the unit availability.
25 I might say that Dave Johnson number 4 we did, in fact, sell
26 power to Montana Power Company; we sold power to Idaho and
27 to Utah. Knaughton 4 was purchased by Idaho and Montana
28 Power Company.

1 Q If you were to have decided to build the two six hundred
2 units at Decker, Wyoming -- or, Sheridan, Wyoming -- could
3 you not have sold either part ownership or power, firm
4 power, to Montana Power Company to satisfy its needs, as
5 an alternative to 3 and 4, 'cause you're right close there?

6 A Well, you're making a supposition that we were ready to
7 build a plant and that its cost was equal or less than
8 Colstrip.

9 Q Yeah, I'm assuming that you had decided to build those two
10 six hundreds.

11 A Well, we could not use two six hundreds within a space of
12 two years in our own system.

13 Q So you would have to either get somebody to go in with you,
14 or is that the feasible alternative to get somebody to go in
15 with you as part owner?

16 A Yes.

17 Q Could that have been Portland Gas and Electric?

18 A You're probably referring to Portland General Electric?

19 Q Yeah, I'm sorry, Portland General Electric.

20 A There would, of course, be substantial transmission, and I
21 do not see --

22 Q Any more substantial transmission than from Colstrip to --

23 MR. BELLINGHAM: I think Mr. Lisbakken hadn't
24 finished his answer yet.

25 Q I'm sorry Mr. Lisbakken, go ahead.

26 A For Portland General Electric Company and Pacific to build
27 two six hundred megawatt plants and the transmission system
28 that would be necessary with it, would be rather an extensive

1 undertaking, and I'm not sure that even these studies have
2 all of the transmission considerations in them. These look
3 to me to be, as they stated, order of magnitude estimates
4 without any study of the transmission system behind it. The
5 eighty nine million dollars that they have in here for
6 transmission, I do not think would transmit twelve hundred
7 megawatts to Oregon and Washington, because present studies
8 indicate that even on a shorter line than that length, it
9 will cost that or more. So I can't even accept these as
10 anything other than an engineer's trial exploration of
11 alternatives. I do not consider these as alternatives to
12 Colstrip. They have not had that kind of study; it's quite
13 apparent from these sheets.

14 Q No, you would have to do further study?

15 A Absolutely.

16 Q And you chose not to?

17 A And further time.

18 Q Are you extending any of these further, or are they still in
19 this preliminary stage?

20 A They're still in preliminary stages, as I understand it.
21 I'm sure they have not had the transmission engineering
22 studies or the environmental studies of the potential routes
23 of alternative transmission routes. There's a vast number of
24 studies that they haven't even -- that haven't even been
25 started in relation to the studies that Montana Power Company
26 has made up to 1973. In other words, when we came into
27 Colstrip, there were far more comprehensive studies made than
28 exhibited in this preliminary analysis of some potential

1 order of magnitude studies.

2 Q Well, if you were concerned about transmission lines, you
3 could have used the Montana Power study of the impact of
4 transmission lines that came out in '73, November of '73, I
5 think, which, I assume, would then only involve an additional
6 study at Sheridan, Wyoming of getting power from Sheridan to
7 Colstrip, or to that transmission corridor proposed by the
8 power company.

9 A Well, except that the movement of twelve hundred megawatts
10 west for Portland General and Pacific, is different than
11 moving seven hundred megawatts for the owners other than
12 Montana. It's a different transmission system, is what I'm
13 saying.

14 Q Well, all right, but we're still operating under the assump-
15 tion that there would only be two other -- one other utility
16 involved in this, and it's conceivable for the purposes of
17 our previous discussion that you could have joined with
18 Puget and Washington Water Power and Montana Power to build
19 something at Decker, isn't it?

20 A Well, this may be a future possibility. I don't think it's
21 a substitute then, or now, for Colstrip, is all I'm saying.
22 It has not had the preparation, the detailed study that
23 Colstrip has had. Now, this may be a future resource
24 potential, but it takes a lot more study than is exhibited
25 here.

26 MR. MELOY: That's all the questions that I have,

27 Mr. Davis.

28 HEARINGS EXAMINER: Redirect?

1 MR. BELLINGHAM: Yes, sir.

2
3 Redirect, By Applicants

4 By Mr. Bellingham:

5 Q Mr. Lisbakken, has your company, within the last year, or
6 thereabouts, received any quotations from the Burlington
7 Northern Railroad relative to the movement of coal from
8 any area to the State of Oregon?

9 A Well, our Mr. Stiles, who is making these engineering studies,
10 has made inquiry of both the Union Pacific and the Burlington
11 Northern Railroad of the cost of transporting Wyoming and
12 Montana coal to some of the potential sites that we've been
13 considering in the Oregon-Washington area. The most recent
14 forecast -- the most recent estimate that we have received
15 from the Burlington Northern, in fact it's more than an
16 estimate, it's a quotation in August of 1975 from the Decker
17 coal field to West Roosevelt site --

18 Q Now, I would like to ask you before you go any further, where
19 is Decker?

20 A Decker is generally north and east fifteen-twenty miles
21 north and east of Sheridan, Wyoming. The mine is in the
22 State of Montana.

23 Q And West Roosevelt is where?

24 A It's on the Columbia River on the Washington shore, generally
25 north of the Boardman area that Portland General Electric
26 Company is developing its coal plant.

27 Q Go on.

28 A The quotation received from the Burlington Northern, using

1 their own cars, was for that thousand mile railroad haul,
2 was twelve dollars and ninety seven cents a ton, which is
3 roughly thirteen mills a ton mile, and interestingly enough,
4 that's an increase of darn near seventy five percent of the
5 quotation two years previously. That August '75 quotation
6 they said would be subject to the AAR index escalation rate,
7 which, during the previous year, had been fourteen and a
8 half percent, and was forecast to be about the same for this
9 next year.

10 Q And you say the increase was approximately seventy five
11 percent?

12 A For a nine hundred and ninety mile haul, quoted in October
13 of '73.

14 Q Now then, prior to the time that you built the Jim Bridger
15 plant -- incidentally, where is Jim Bridger located?

16 A It's about thirty miles east and slightly north of Rock
17 Springs, Wyoming, in the southwest corner of Wyoming.

18 Q Prior to building that plant, did you have Bechtel make any
19 study regarding the comparison between mine mouth generation
20 as distinguished from shipping the coal to an area in Oregon?

21 A We had Bechtel do an engineering analysis and evaluation of
22 three basic alternatives: a mine mouth plant in Wyoming,
23 such as the Jim Bridger location; shipping the coal to Oregon
24 locations in the Willamette Valley or the lower Columbia
25 River area; and a third alternative of a nuclear plant located
26 in the Willamette Valley or lower Columbia River area.

27 Q And do you recall the date of that study?

28 A In July of '68 was the first report.

1 Q Do you recall the results of the study?

2 A Well, I can't quote specifically the results, because it's
3 been massaged a great deal at that time, but the general
4 outcome was that the engineering studies, together with the
5 Bechtel study, caused the conclusion that Jim Bridger plant
6 was the most economic thing at that time for Pacific Power
7 and Light to build.

8 Q In other words, the mine mouth generation?

9 A Yes.

10 Q And Jim Bridger was built?

11 A Yes. Two of the four units planned are in operation now.

12 Q Do you have any figures that compare the 1975 sales of your
13 company with the 1974 sales?

14 A These are preliminary figures and there's obviously always
15 some slight adjustments year-end, but the power accountants
16 and treasury men in our company have reported to me that the
17 total general business sales were up four point two percent
18 over 1974. The residential sales were up seven point two
19 percent. The commercial sales were up nine percent. And
20 the industrial sales were down about one percent.

21 Q Now that is your total system?

22 A Yes.

23 Q Do you have any comparable figures as far as your Montana
24 area is concerned, that is, the area serviced by you in
25 Montana?

26 A Yes, and they're going to concern me with looking at the
27 revision of the Montana forecast. There's been a tremendous
28 spurt in the Montana sales in 1975 over 1974. Our residential

1 sales have increased twelve point four percent, commercial
2 sales nine point seven, industrial sales twenty three point
3 eight percent, government up five point three, total general
4 business fourteen point four. Then there's been an increase
5 in resale sales and interchange to a net total of sixteen
6 percent increase in total sales in the State of Montana over
7 1974.

8 Q Turning next to the number of residences that are constructed
9 to burn electrical heat, or to utilize electricity as the
10 heating source, in 1975, do you have any figures on that
11 insofar as your system is concerned?

12 A Well, excluding Wyoming, as I told Mr. Shenker, it's pre-
13 dominantly a gas area, but the other states of Oregon,
14 Washington and Montana have shown eight thousand five
15 hundred thirty three new homes connected in 1975, against
16 eight thousand five thousand and thirty three homes that
17 were connected with electric heat, out of a total of nine
18 thousand eight hundred and ninety one connected homes,
19 multi-family units and mobile homes, for a total of eighty
20 six percent electric heat installations.

21 Q Do you have any figures for previous years?

22 A 1972 was running fairly constant in the late '60's and early
23 '70's at about sixty percent all electric, or electric heat,
24 excuse me, and it's gradually increased, rather rapidly
25 increased from '72 to date.

26 Q All right. How much of your company's interest in 3 and 4,
27 which is ten percent, insofar as the electricity generated
28 therefrom is concerned, is going to be utilized by your

1 company to service your customers in Montana?

2 A Well, I may have to revise the forecast after I got these
3 latest increases in Montana load. We're within three percent
4 of my '76 estimates, so that I'm afraid my '76 estimate is
5 too low. But, excepting the estimate we put in in Exhibit
6 21-G, with Colstrip units 3 and 4 in 1981-82, we will
7 essentially use all of the Colstrip power other than fourteen
8 megawatts within the State of Montana, including our own
9 generation. By '82-'83, we have a surplus -- excuse me,
10 we have a deficiency and must continue to import power into
11 Montana even with the Colstrip -- our share of Colstrip
12 units 3 and 4.

13 Q Now, are you referring to peak, or energy?

14 A I was referring to peak.

15 Q And what about energy?

16 A On an energy basis, shown on Exhibit 21-H, including the
17 units, we will not have to import energy into the State of
18 Montana through '85, assuming we get the expected availability
19 of the units of seventy five percent of the time.

20 Q Now then, I'd like to call your attention to your written
21 statement on page 5, line 12, commencing with the sentence
22 that appears there, the unadjusted load growth for twelve
23 months ending November, 1975 has been about five percent
24 above the same period in '74. Now, do you have an up to date
25 unadjusted load growth for the entire year of 1975?

26 A Well, for the entire year of 1975, unadjusted, the increase
27 of '75 over '74 was four point nine percent, but included in
28 that was the disposal of about fifty megawatts of load in

1 the city of Springfield in June of 1975, so by dropping that
2 out of the historical load, the remaining load without the
3 Springfield load on an otherwise unadjusted basis, in other
4 words, no adjustment for temperature, leaves an increase of
5 five point nine percent total company load 1975 over 1974.

6 Q Now you mentioned Springfield, Oregon location. What is
7 the situation there?

8 A That's a small area where it appeared economic to dispose
9 of the property to the municipal system in the city of
10 Springfield, and that was arranged in June of '75.

11 Q Now then, there has been some discussion and prior testimony
12 relative to companies dipping into their reserve requirements.
13 Have you had a situation such as that existent in the last
14 few years?

15 A Yes, it's happened a number of times. The most dominant ones,
16 December of '72 when we had a two to three week extensive
17 cold spell -- I guess it was well over three weeks, and it
18 hit the entire northwest. We fell below our reserve require-
19 ments and were purchasing peak and energy on a week to week
20 basis to the extent it was available for both spending
21 reserve and for daytime heavy load hour energy from California
22 utilities.

23 Q How long did this go on?

24 A That was for about a three week period.

25 Q What about the fall of '73?

26 A The fall of '73 was primarily an energy deficient period; as
27 Mr. Goldhammer explained this morning, when the reservoirs
28 did not fill before the start of the drawdown season due to

1 a prior year lack of snow cover, and the area faced a
2 potential serious energy shortage, and all utilities were
3 buying energy to the extent available on a non-firm basis
4 to try to protect their firm load, and we were paying oil
5 prices which were rapidly escalating in the fall of '73,
6 Pacific Power and Light was purchasing not only from several
7 utilities in California, but we also arranged to purchase
8 some energy from Public Service Company of New Mexico in
9 Albuquerque. That period of critical water, as Mr.
10 Goldhammer explained, changed in November and by December
11 we had ample water and the reservoirs were returned to normal,
12 and by January, Bonneville had surplus energy.

13 Q Were you below critical water for any extended period during
14 that year of '73?

15 A Yes, that year proved to be one of the -- proved to be a
16 less than critical water year, as a water year. It was not
17 more severe than -- it did not continue to be severe for a
18 three and a half year critical period that we experienced in
19 '28-'29, but as a single year, it was worse than any of the
20 recorded water years since 1928.

21 Q During what months did you have a situation involving --

22 A Well it was generally from May through November; in the
23 April-May period, we were attempting to fill reservoirs
24 prior to their drawdown in the August period.

25 Q Now then, there have been put to you various statements
26 previously by opposing counsel, statements made by people
27 working for your company, taken apparently in depositions and
28 taken from memorandums a year or more or so ago relative to

1 3 and 4. You previously indicated faith in their judgment,
2 but does that expression necessarily go forward to include
3 the fact that you necessarily agree with them in all of the
4 statements and all the memorandums that were made at that
5 time?

6 A No, because I don't have the background to know the basis of
7 their conclusions and they may well have changed their
8 conclusions since that date due to additional information.

9 MR. BELLINGHAM: No further questions.

10
11 Re-cross, By Department of Natural Resources and Conservation,

12 By Mr. Shenker:

13 Q What is the percentage load growth that you project?

14 A Total company is about six percent, I believe, Mr. Shenker.

15 Q And it was four point nine percent for the total company
16 last year?

17 A Yes.

18 Q There was some discussion with Mr. Bellingham --

19 A Unadjusted four point nine. Unadjusted without respect to
20 the Springfield. With the adjustment for Springfield, it was
21 five point nine.

22 Q Is your six point five percent figure an adjusted one or an
23 unadjusted one?

24 A I can't speak to a six point five. I believe in our total
25 company long-range forecasts it's about six point one percent,
26 is it not? Well, page 5, line 21, I said six point two
27 percent average rate of growth.

28 Q Adjusted or unadjusted?

1 A That's the rate of growth. It does not include the Spring-
2 field, so I would say it was adjusted to exclude Springfield,
3 yes. Six point two versus five point nine.

4 Q What was the Springfield load?

5 A About fifty megawatts.

6 Q How long have you had that on line?

7 A We've had it since 1953 to June of 1975.

8 Q Was it always fifty megawatts?

9 A No. It's grown over the years.

10 Q Now, your total Montana load is not very big is it, compared
11 to the rest of your system?

12 A It's respectable. It's bigger than some of our portions of
13 our system.

14 Q Oh, sure, what is unique about the Pacific Power and Light
15 Company system is that you have a very large number of
16 relatively small areas that you serve?

17 A Yes. The State of Montana load is around a hundred megawatts
18 which is larger than our total load in Wyoming at the time
19 we took over the state power company in Wyoming.

20 Q But of your total load in your entire integrated system,
21 which is the way in which you do your power planning, you are
22 now looking at four thousand three hundred and sixty one
23 megawatts in resources, and three thousand eight hundred and
24 eighty megawatts in load on peak. And in Montana, you have
25 something less than four percent of that load, is that right?

26 A Yes.

27 Q You still look at your Montana load as part of the integrity
28 of your entire system, do you not?

1 A Absolutely. We give it just equal attention with the rest
2 of the system.

3 Q Of course. Now utilization of Colstrip power in Montana was
4 the subject of discussion between you and Mr. Bellingham.
5 Actually it's not quite accurate, is it Mr. Lisbakken, to
6 talk in terms of utilization of any particular source of
7 electricity in a particular area, because from time to time,
8 the juice actually, across the lines from the Colstrip
9 generating station, might wind up in one of your loads in
10 southern Oregon, or in Wyoming, or in Montana, or in
11 Washington, or practically anyplace in your system, depending
12 upon where the transmission needs were at the time, isn't
13 that true?

14 A In terms of an actual power flow standpoint, that's correct.
15 The power flow and the magnitude of the load within a given
16 area, though, does involve us in the difference between a
17 contract path for the transmission of the power, as opposed
18 to the actual flow, which may be different.

19 Q I think I must have misheard you when you were testifying on
20 redirect examination, Mr. Lisbakken. I thought that you
21 said to Mr. Bellingham that, with the Colstrip units 3 and 4,
22 you would still have a deficiency on peak in your Montana
23 loads. That's not the way I read Exhibit 21-G.

24 A Well, take 1982-83, including the Colstrip units at line 6,
25 we are having to import seven megawatts of additional resource
26 over and above the hundred and forty megawatts of Colstrip
27 units 3 and 4.

28 Q That's how you come up with a deficiency? Actually, you don't

1 have a deficiency that year, but the next year you would
2 have a slight deficiency in 1983-84, by subtracting imports
3 from the surplus? Seven from ten does not a deficiency
4 make, but nineteen from six does?

5 A Let me state it differently, then. That PP&L generation, on
6 line 4, includes twenty five megawatts combustion and turbine.
7 We do not propose to operate that combustion turbine to meet
8 peak loads if we can supply it from elsewhere in the system,
9 because of the obvious operation cost of a combustion turbine.
10 Therefore, if you look at the hundred and forty megawatts
11 plus five megawatts of hydro generation, you have a total of
12 a hundred and forty five megawatts of economic generation,
13 compared to a hundred and fifty two megawatts of peak load,
14 excluding reserves, and it requires the import of seven
15 megawatts of capacity, presumably less costly to operate than
16 the combustion turbine at Libby.

17 Q Now I understand, Mr. Lisbakken. What you're telling us is
18 that if you do not utilize all of the resources that appear
19 under resources on Exhibit 21-G, you will have a deficiency?
20 Right? Well, those combustion turbines you talk about are
21 listed now under resources as PP&L generation, aren't they?

22 A That's right, but they're --

23 Q And the imports are listed under resources as well, aren't
24 they?

25 A They are listed as a reserve resource.

26 Q Where does it say reserve resource? It says, resources,
27 doesn't it? On Exhibit 21-G.

28 A Well, if you will go to Exhibit 21-E, you will find that we

1 are using that combustion turbine as a reserve resource.

2 On 21-D -- excuse me, on 21-C, we are using that combustion
3 turbine as a reserve resource, not as a planned, operating
4 resource, but as an emergency reserve for forced outages of
5 transmission or generation where no other power source is
6 available to replace it.

7 Q On Exhibit 21-G did you say that?

8 A It is not so stated.

9 Q Thank you. What was your peak in 1974? That's an actual
10 figure. Do you have that available?

11 A I do not have a final figure because -- I have a figure that
12 was coincidental with the rest of the system. I do not have,
13 and I wasn't able to get this morning, the log sheets with
14 the usual adjustments that need to be made.

15 Q It's 1974 I'm talking about, sir.

16 A Oh, excuse me. Yeah, I can supply you '74. We had an
17 eighty one megawatt --

18 Q You're talking Montana. I'm talking about your whole system.

19 A All right. Total company. The system peak, excluding
20 special sales, was three thousand and fifty seven megawatts.

21 Q Three thousand how much?

22 A Excuse me, let me correct it again. Three thousand one
23 hundred and eight megawatts of maximum hour system input 1974.

24 Q Is that in actual load?

25 A That's an actual load, coincidental throughout the six
26 states.

27 Q Then why did you supply us with the interrogatory information
28 that you had three thousand two hundred and seventy six

1 peak hour megawattage in 1974?

2 A It's possible we didn't have the final adjusted number.

3 The difference sounds small. The other question is whether
4 or not it was coincidental or non-coincidental that we
5 supplied you.

6 Q Now, in 1973, Mr. Lisbakken, your annual report said nothing
7 at all about Colstrip, did it?

8 A I do not have the 1973 annual report with me.

9 Q Do you want to take a look at it?

10 (MR. SHENKER HANDS DOCUMENT TO THE WITNESS)

11 A Well, I don't see, and if you read it and didn't find it,
12 I'll accept that, that it was not mentioned.

13 Q In your description of future development, what it says is,
14 the company is looking at its options and it'll determine
15 what it has to do, and do that, right?

16 A Yes.

17 Q Now that annual report, of course, had to be issued sometime
18 in 1974, was it not?

19 A Yes.

20 Q Therefore, it was issued some number of months after the
21 company had filed an application, and after it had agreed to
22 participate in Colstrip, isn't that true?

23 A Yes. There's another project that's not mentioned in there,
24 I see, is the Wyodak project, and that project was underway
25 about that time.

26 Q Yes, that was going to be my next question to you. Why wasn't
27 that one mentioned?

28 A I can't answer that, except to say that it was still in the

1 planning stages, I guess you'd say, and not -- and it was
2 committed, but the magnitude of the commitment was small at
3 that time. That is not the case; it is mentioned in the '74
4 annual report; it is mentioned in -- both the Wyodak and the
5 Colstrip units are mentioned in all prospectus reports. The
6 most recent ones that I have are January of '76 and December
7 of '75.

8 Q You gave us the information on redirect examination, Mr.
9 Lisbakken, of system growth for PP&L of 1975 over 1974 and
10 1974 over 1973. Do you know what it is for 1973 over 1972?

11 A On a system input basis, I think -- 1973 over 1972, unadjusted
12 total system input, excluding special sales, was three point
13 seven percent. That was, of course, during the period that
14 we were first starting to experience both the economic and
15 the conservationist slowdown.

16 Q Okay now, you gave Mr. Bellingham some figures about a
17 Burlington Northern coal quotation that you took from your
18 notes. Did you get that from Jack Stiles over the phone
19 today or yesterday?

20 A Yes.

21 Q Could I see those notes, please, Bob?

22 A Sure. There's the August '73 number of eight dollars and
23 ten cents. Decker to Boardman was seven dollars and forty
24 cents per ton, which is nine hundred and ninety miles, so
25 it's roughly seven and a half cents a ton mile. And the
26 Burlington Northern quotation, which was made in August by
27 telephone following a May 29, 1975 request from Stiles to
28 Burlington Northern for Decker to Roosevelt, one of the

1 conditions was unloading ten thousand tons within four hours,
2 we had to provide those unloading facilities. It would ship
3 with seventy five to a hundred and ten cars. Burlington
4 Northern furnished the cars, it was twelve ninety seven a
5 short ton --

6 Q And that's the same as six point seven mills a ton mile?

7 A No. That's not right.

8 Q You wrote down the figure, six point seven mills a ton mile.
9 Does that refer to something else?

10 A Yes. That refers to six point seven mills per KWH, the
11 equivalent per kilowatt hour. The mills per ton mile would
12 be thirteen mills per ton mile, sixty seven cents per
13 million BTU, or about six point seven mills a kilowatt hour.
14 With Pacific colliding the cars, it would be eleven dollars
15 and ten cents per ton, which, of course, for a thousand mile
16 railroad haul -- Decker to Boardman was nine hundred and
17 ninety miles; Decker to West Roosevelt was a thousand railroad
18 miles.

19 Q All right. And you had the indication from Mr. Stiles that
20 the AAR index inflates with a two year lag?

21 A Right. And the increase the past year was fourteen and a
22 half percent. We have not gotten an answer from UP as yet.

23 Q Union Pacific has also been asked to submit a quotation?

24 A Yes. But to deliver from Decker to West Roosevelt is a --
25 involves more than one railroad.

26 MR. SHENKER: I have nothing further. Thank you,
27 Mr. Lisbakken.

28 HEARINGS EXAMINER: Mr. Meloy?

1 MR. MELOY: Nothing.

2 HEARINGS EXAMINER: Mr. Bellingham?

3 MR. BELLINGHAM: No.

4 HEARINGS EXAMINER: Well, thank you very much
5 gentlemen, and you're excused. Mr. Shenker?

6 (WITNESS EXCUSED)

7 MR. SHENKER: Yes. Two brief things, Mr. Davis,
8 if you please. The first is the exhibit which I forgot
9 to offer before Mr. Goldhammer left, for illustrative
10 purposes, it's marked as DNR Exhibit number 24.

11 HEARINGS EXAMINER: DNR number 24 is admitted.

12 MR. SHENKER: Secondly, I advised Mr. Bellingham
13 a few moments ago, we were advised by one of our
14 witnesses, a Dr. Clarence C. Gorden, that he would like
15 to have his laboratory assistant, Mr. Phillip Tourangeau,
16 T-o-u-r-a-n-g-e-a-u, submit testimony along with
17 Dr. Gorden's testimony, because Dr. Gorden will simply
18 not have the opportunity to do all the laboratory work
19 necessary, so we add Mr. Tourangeau as a witness. I
20 understand from Mr. Bellingham that Mr. Peterson is
21 designated to worry about that phase of the case and
22 Bill said that he would tell Jack about it.

23 HEARINGS EXAMINER: And now, so everybody will
24 recall, we're going to adjourn until 1:30 on Monday.
25 Will you tell Mr. Graybill it'll be 1:30 Monday because
26 of witness scheduling problems?

27 (RECESSED AT 4:45 P.M.)

